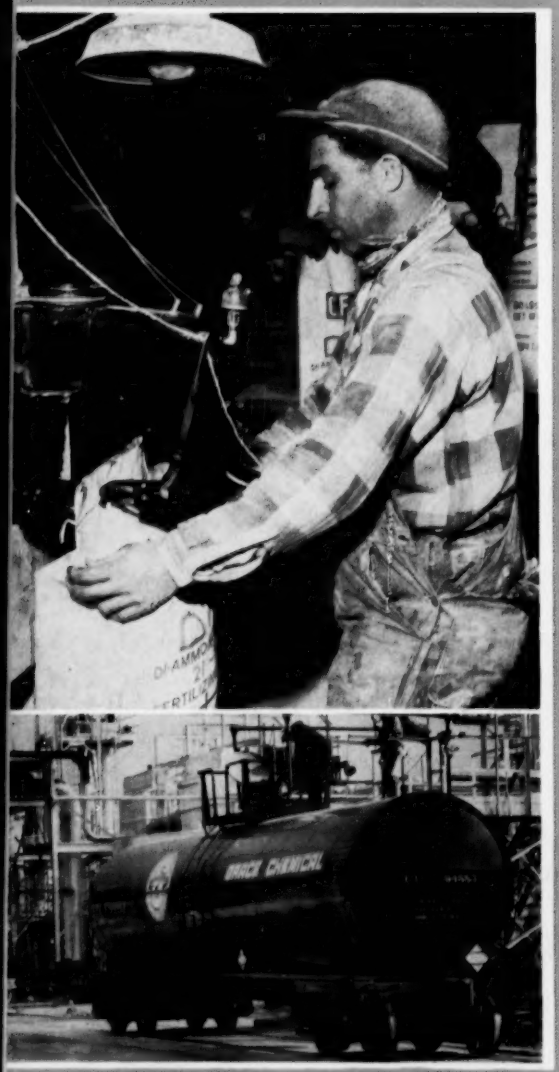
Chemical Week

February 5, 1955 Price 35 cents



It could happen here: pollution laws so severe, like Britain's, that they limit expansion . . . . p. 20

Concerned about state pesticide laws? Look at Florida's 'model' regulation and its effect . . p. 38

Sulfuric's out, phosphoric's in as coke-oven operator switches to diammonium phosphate . . p. 50

Worth watching: field tests of new cyanuric chloride-based, broad-spectrum fungicides . p. 58

More and more ammonia rolls out of new units; question: will it all find takers? . . . . . p. 75

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when YOU WANT IT

how YOU WANT IT

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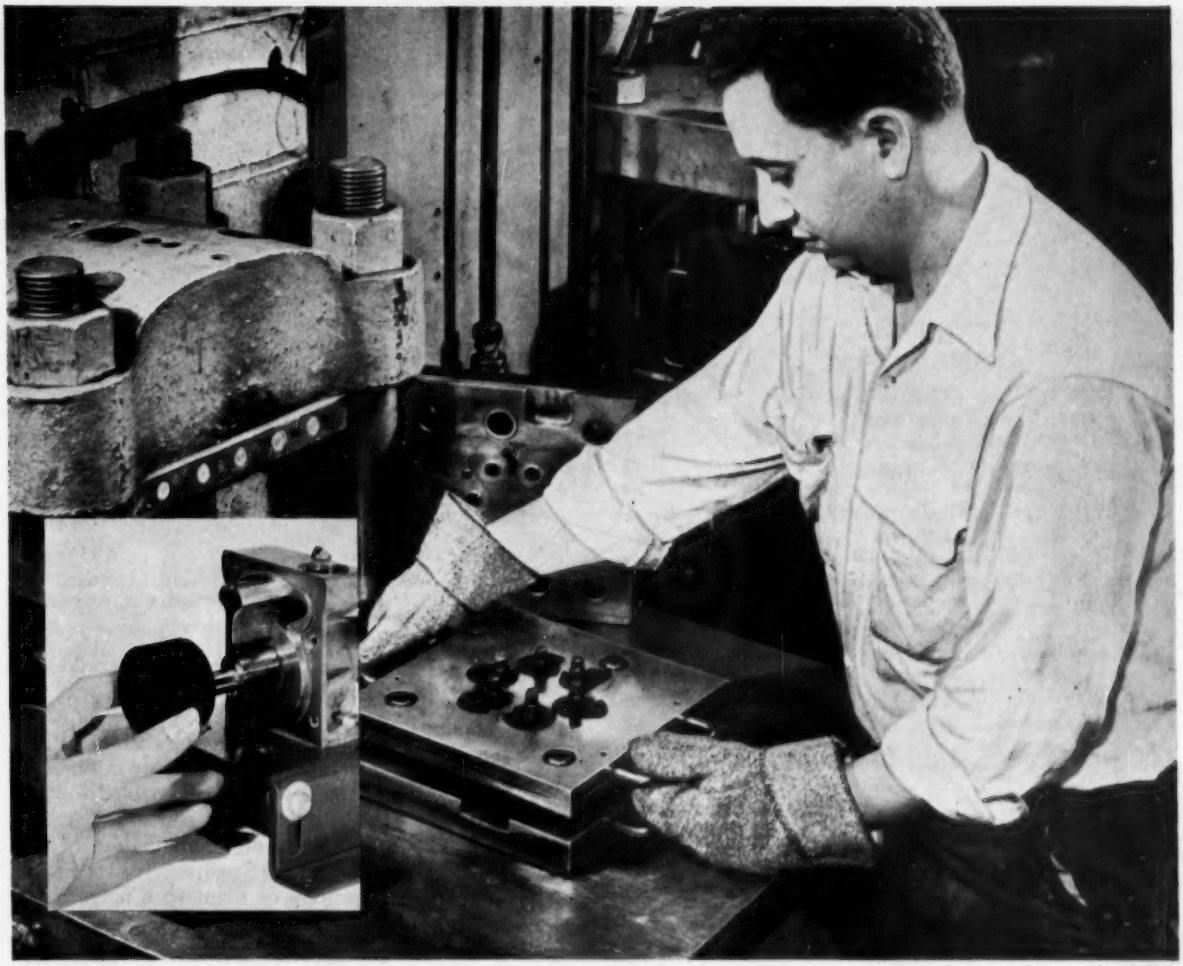
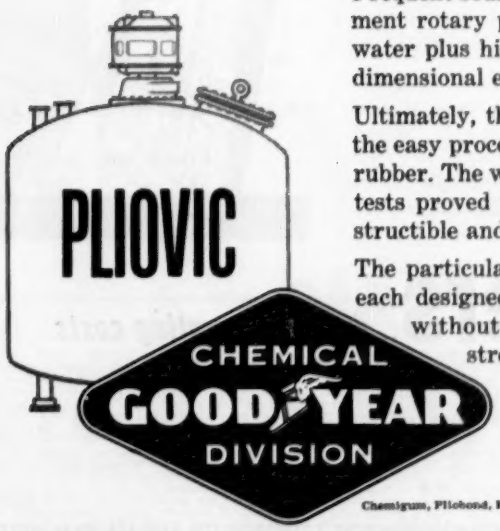


Photo Courtesy Eco Engineering Company, Newark, N. J.

How to relieve a tight situation



Frequent source of trouble in a certain type of positive displacement rotary pump was its elastomeric impeller. Absorption of water plus high operating pressures and frictional heat caused dimensional expansion which stilled its pumping action.

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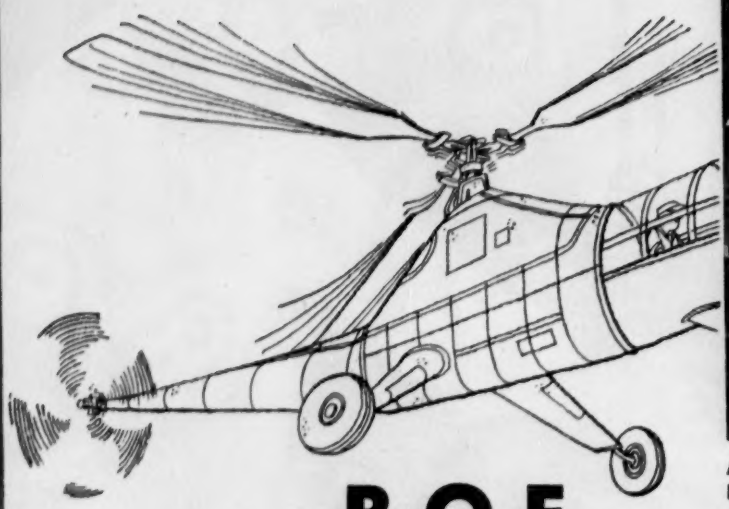

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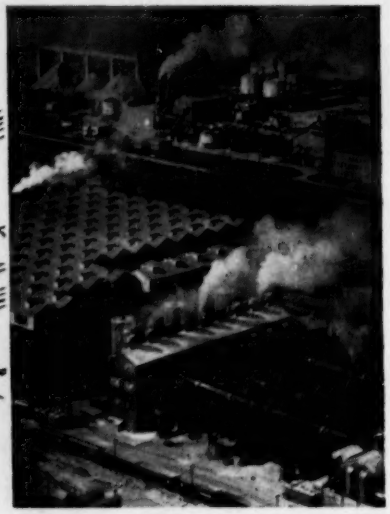

A Basic Process Change was required for an alumina producer when bauxite from Jamaica was added to the established source of Surinam bauxite. Differing chemical characteristics of the ore were minimized by the design which enabled the enlarged plant to process *either* bauxite, alone or in any combination of the two. A Kaiser Engineers plus is design of process or plant with operational flexibility built in.

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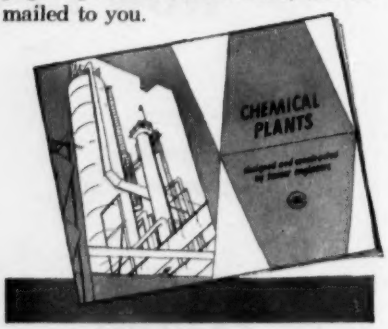

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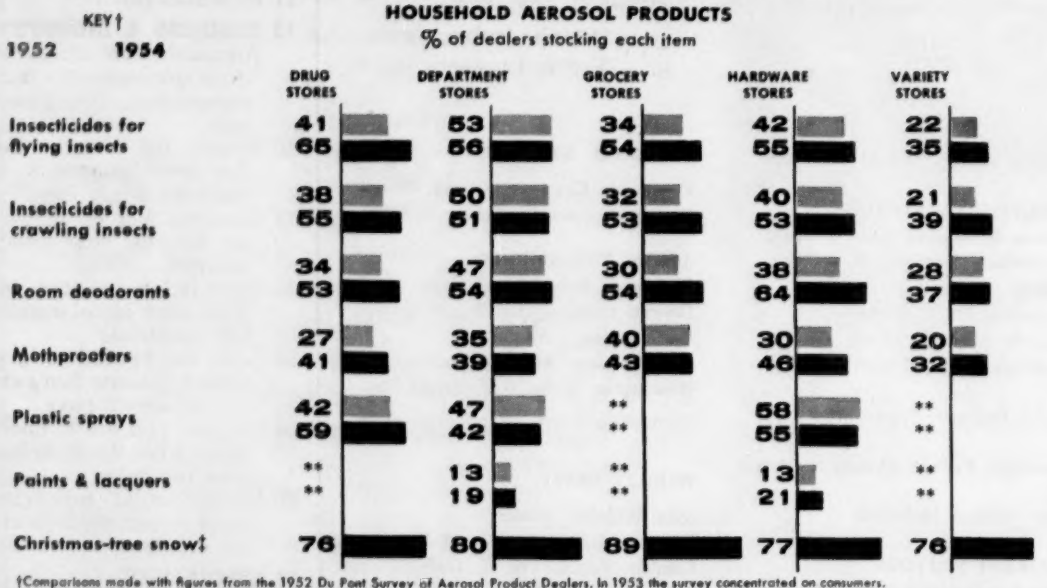
LATEST DU PONT SURVEY REVEALS

Aerosol sales up

Q. Of 100 sales of these household products, about how many would you say are of the aerosol type?



†Comparisons made with figures from the 1952 Du Pont Survey of Aerosol Product Dealers. In 1953 the survey concentrated on consumers.
‡Christmas-tree snow was not included in the 1952 survey, so no comparisons can be made.
**No figures can be shown because bases were too small to be valid.

Du Pont can give you all the facts

The above figures—based on Du Pont's 8th Annual Survey of the Aerosol Market—reflect the growing popularity of aerosol products of every type. This established acceptance can help you bring sales success to many products by marketing them in aerosol form. Du Pont will be glad to help you enter the aerosol market. As manufacturers of "Freon"* fluorinated hydrocarbon propellents, Du Pont was one of the pioneers in working with the aerosol industry.

LABORATORY RESEARCH. The technical facilities of the "Kinetic" Laboratory are unsurpassed for work with aerosols, and will be put at your service. Our experienced chemists can help determine whether a product is suitable for aerosol packaging. They can assist in developing the formulation that will make the product most effective. And they'll help you set up your own aerosol laboratory for testing and development purposes.

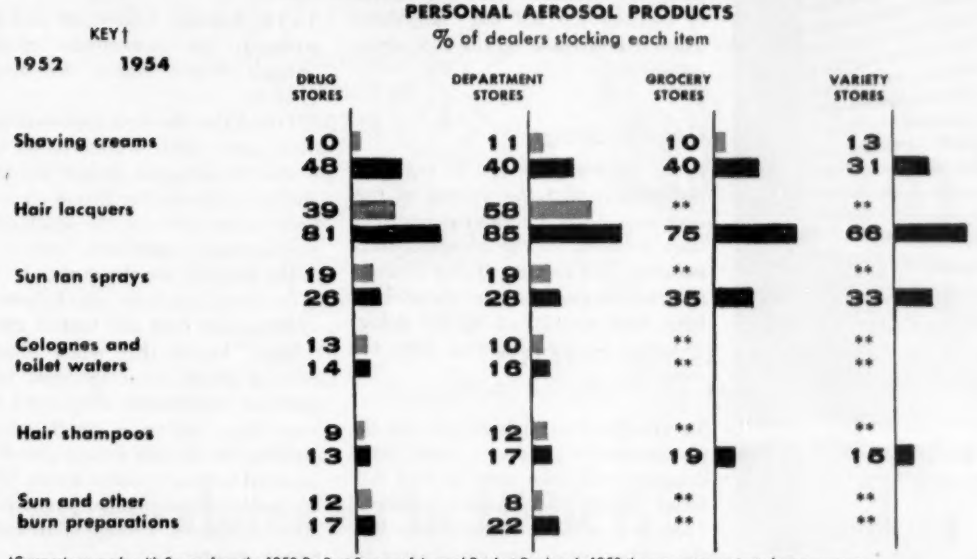
MARKETING SERVICES. Among important contributions to aerosol marketing knowledge are Du Pont's annual surveys of retailers and consumers. Digests of the survey findings contain facts vital to everyone interested in aerosol selling. (See offer on right.) Du Pont will also help you contact valve and container suppliers, as well as "contract loaders" who can do your aerosol packaging and save you the investment in plant equipment.

DUPONT "FREON" PROPELLENTS. By far the majority of aerosols sold today use Du Pont "Freon" propellents. "Freon" has established a reputation for pure, uniform quality. And it's safe . . . nonflammable, nonexplosive, virtually nontoxic. There are actually many "Freon" propellents. Our lab men will help select the one—or combination—that best suits any product you have in mind.

in many markets

Q. Of 100 sales of these personal products, about how many would you say are of the aerosol type?

PERSONAL AEROSOL PRODUCTS
% of dealers stocking each item



†Comparisons made with figures from the 1952 Du Pont Survey of Aerosol Product Dealers. In 1953 the survey concentrated on consumers.
**No figures can be shown because bases were too small to be valid.

about profitable aerosol packaging

FREE BOOKLET OF SURVEY FINDINGS GIVES INFORMATION ON MANY FACETS OF AEROSOL MARKETING

Send for Du Pont's booklet "Spotlight on the Aerosol Market"—the digest of the findings of the 1954 dealer survey. It answers your questions about such important matters as:

Aerosol product distribution in every type of store.

How dealers rate aerosol products on attractiveness of packaging and labeling in comparison to products in other types of packaging.

Number of brands carried in various aerosol product categories.

Dealers' rating of aerosol products as display items . . . and their reasons.

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Please send me a copy of the Report of Du Pont's 8th Annual Survey of the Aerosol Market.

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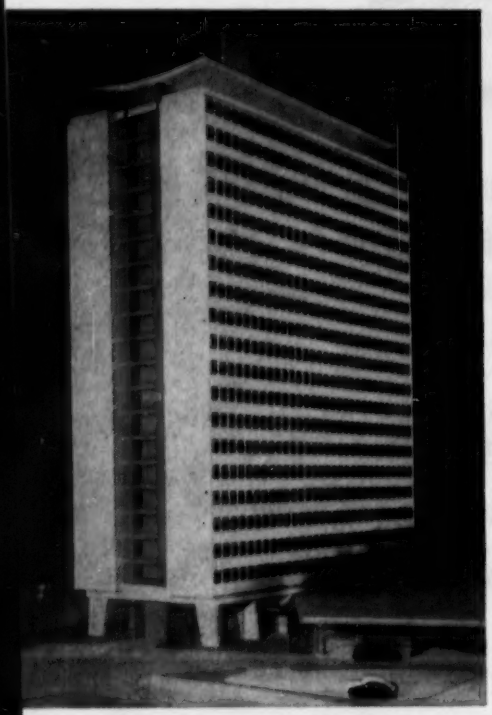
162

OPINION . . . . . .



MODEL OF BASF OFFICE: By a year from July, the real thing.

Germany A-Building

TO THE EDITOR: We were very interested in Karl Falk's CW Report on the West German chemical industry (*Jan. 15*). It is not only very interesting, but also a very informative article.

Having recently returned from two years of service in the U.S. Army, and having been stationed at Frankfurt, I was surprised to see the I. G. Farben Hochhaus pictured in the article. This photo was obviously taken postwar, and as far as I have been able to determine, the U. S. Army still completely occupies this building and surrounding buildings. Unless the Army has returned this property to the German economy . . . it has not been used as a headquarters for any giant other than the Army since 1944.

It would be interesting to note whether my knowledge of the above is currently correct . . .

J. HOFFMAN
Marklin Chemical Corp.
New York, N.Y.

Reader Hoffman is right; the photo we published of the former I. G. headquarters was inappropriate as a symbol of today's German chemical industry. More appropriate is the 26-story office being built by BASF at Ludwigshafen. (Photo left is of architect's model.) The cornerstone was laid in December; completion is scheduled for July, 1956.

Another Farben splinter, Hoechst, has put up its own 14-story office building. No German chemical company now seems to have any interest in bidding for the old "Hochhaus" when it is released by the U.S. Army. —ED.

Cost of Drugs

In an editorial (Jan. 8) CW expressed the opinion that the pricing of prescriptions poses a serious public relations problem for the pharmaceutical industry. The validity of that observation and the dimensions of the problem have been established by the deluge of letters we have received. Here is a sampling:

TO THE EDITOR: It is hoped that the pharmaceutical industry and retail druggists will take note of your editorial, "Rough Water Ahead for Drugs" (*Jan. 8, p. 4*). But I also believe that the medical profession could assist by refraining from writing prescriptions for drugs that can legally and safely be purchased by medical term or tradename.

Although some doctors follow this practice now, not enough do so. It is obvious that the pharmaceutical industry expects the doctor to write prescriptions for items such as "Gelusil" (which is typical) . . . sold in a package with an extra "tradename" label perforated for easy removal by the druggist so that he can affix his own label, prescription number, and price tag . . .

ROYAL B. JACKMAN
Los Gatos, Calif.

TO THE EDITOR: In your editorial, "Rough Water Ahead for Drugs" (*Jan. 8*), you overlooked one big argument the public sets forth against the pharmaceutical industry. The doctor prescribes dosages in quantities two to three times the actual amount needed, and the druggist fills the prescription without comment. Bills are then not $2.75 or $3.75, but $12.75 and $15.75, and, more likely than not, cover a prescription that would supply six people, not one.

Furthermore, the old joke that it took two weeks to overcome the after-effects of the drug taken for a three-day illness isn't very funny, and doesn't speak well for the "efficacy value" of any drug.

MARTHA JOY MARTIN
Cincinnati, O.

TO THE EDITOR: I have just read your editorial [on prescription prices], "Rough Water Ahead for Drugs" (*Jan. 8*) . . .

I think that the most important point made, and which is done rather well, is that the druggist dodges the issue. He has to fasten the blame on somebody rather than risk the wrath of the neighborhood customers, and so we in the industry are the goats.

Certainly, anybody who follows the stock market with any sort of critical thinking knows that while pharmaceutical stocks are considered to be excellent investments, they are a long way from having a reputation for yielding the highest returns per dollar invested in their common stocks. There are many other companies in many other industries whose yields are infinitely greater.

While we are called "profiteers" by some segments of the general public, I for one have no knowledge of such a situation on the part of the so-called ethical pharmaceutical companies . . .

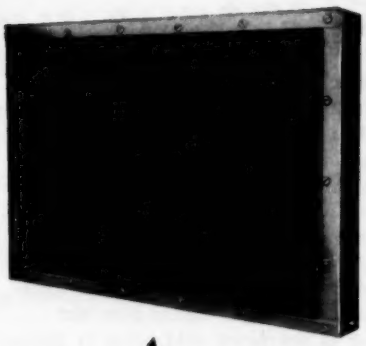
HENRY WENDT, JR.
Director of Sales
Lederle Laboratories Div.
American Cyanamid Co.
Pearl River, N. Y.

TO THE EDITOR: . . . I was particularly interested in your editorial on prescription pricing (*Jan. 8*) and the resentment that is brewing in the public mind concerning their being overcharged . . .

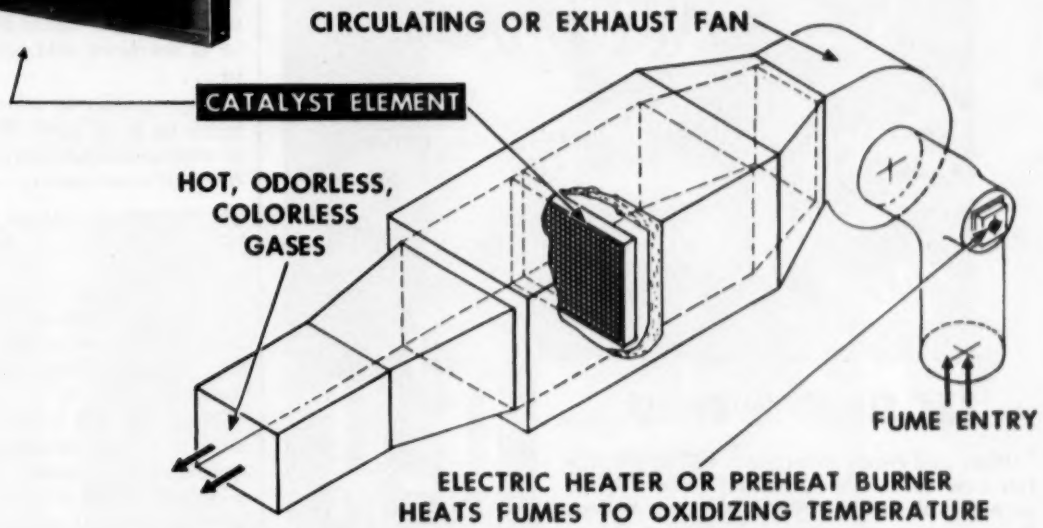
As a psychologist, I would say that

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.



Basic Elements of Fume Combustion System for eliminating odorous, poisonous, explosive or flammable fumes from industrial processes. The Catalytic Combustion Corp., Detroit, Mich., produces and installs systems that furnish useful heat for many operations . . . while routing smog, smells and noxious gases.



At temperatures up to 1500°F

Catalytic Combustion Units Using Nickel-Chromium Alloys

Operate Efficiently for Years

Scores of plant operators now liberate and use heat energy that, heretofore, went to waste . . .

And by the same means, these operators control air pollution and convert noxious or explosive fumes into odor-free harmless gases.

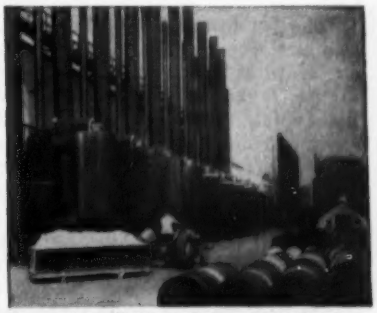
How? By catalytic oxidation on the industrial level. Thanks to a Catalytic Combustion Corporation development which utilizes the catalytic action of platinum and the heat-and-corrosion resistance of nickel-chromium alloys.

The drawing shows fundamentals of a catalytic fume combustion system, and the photograph shows a typical catalyst element, 18" x 24" x 2⅝", weighing about 30 pounds.

The latter comprises a frame of 18-8 chromium-nickel stainless steel, and 16-mesh screen of 60-16 nickel-chromium alloy (ACI Type "HW"), containing mat of this alloy in the form of ribbon . . . two miles of it . . . 1/16" wide. Deposited on this mat is the catalytic medium, vital metallic platinum.

Screens and mat of the 60-16 nickel-chromium alloy resist both heat and corrosion to an extent that assures long life and efficiency at temperatures up to 1500°F. Moreover, thermal expansivity of the alloy is close enough to that of platinum to prevent spalling or flaking of the catalyst.

Hourly, the 2-mile alloy ribbon mat with its catalytic agent can handle up to 3000 pounds of most gases, and liberate heat at rates up to 800,000 B.T.U.



Large Installation of Catalytic Combustion Units . . . used to decompose irritating exhaust gases from production of phthalic anhydride at Detroit plant of Reichhold Chemicals Co. It comprises these two batteries of 10 units each, and eight similar units, not shown. Each incinerator processes 1200 cu. ft. of gas per minute, 24 hours daily. Ten initially installed in 1949 have now given more than 30,000 hours' service with no catalyst replacement.

Nickel alloys may help you, too, improve your products or equipment. Whenever you face a metal problem, send us the details for our suggestions.

INCO

THE INTERNATIONAL NICKEL COMPANY, INC. 67 Wall Street New York 5, N.Y.

THE EIMCO BURWELL

Plate and Frame Filter users will appreciate this new Eimco filter because it does EASILY so many of the jobs that were long tedious tasks on the conventional Plate and Frame Filter.

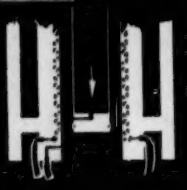
Take for instance the long job of opening and closing — now, with the Eimco, it's a matter of push-button control with instant response, takes no time at all.

Cleaning, which may take hours on the conventional machine, requires no down time on an Eimco, simply rotate the cleaned frame into position and start filtering again.

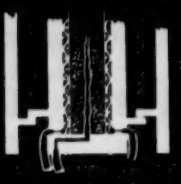
You get several times the washing efficiency with an Eimco over conventional plate and frame filters. The split cake which is evenly formed over the entire surface of each plate is washed by introducing the wash water through the feed port. Thus both surfaces of filter media are utilized for the outward passage of wash liquor, instead of only one surface as on conventional plate and frame filter. Washing efficiency is, therefore, at least doubled.

One hundred square feet of filter area on an Eimco Burwell filter is equal to 5, 10 or 20 times that amount of area on a conventional plate and frame filter.

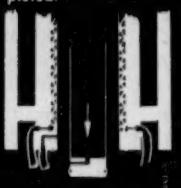
Write for complete information.



Plates open to allow frame to enter and position for filtering.



Plates closed on frame — in this position the feed, wash and blow portion of the cycle are completed.



Plates open to allow filled frame to move down and out.

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OPINION . . . . . .

much of this feeling might be explained by an analysis of the situation. The whole prescription procedure savors of secrecy . . . a doctor writes the order out in Latin and hands it out as a secret message . . . the recipient takes it to the druggist to be filled —not knowing just what he is going to get. He feels, therefore, that something is being withheld from him . . . he is not being told what is going on . . .

Consequently, an inherent distrust builds up in his mind. So, regardless of what price he is charged, he is inclined to be antagonistic . . .

RALPH R. CORNING
Amenia, N. Y.

TO THE EDITOR: . . . I am keenly interested in the subject of the cost of drugs and I have profited by reading your editorial, "Rough Water Ahead for Drugs" (*Jan. 8*) . . .

What you said covers the subject much more fully than anything I have written on the subject . . . I'll quote from it in several scheduled speeches to pharmaceutical manufacturers and retail pharmacists during the next few months . . .

Perhaps you will be interested in the enclosed booklet which will soon be mailed to all pharmacists and physicians in the U.S. . . .

ROBERT A. HARDT
Vice-president
Hoffmann-La Roche, Inc.
Nutley, N.J.

Thanks. The very interesting booklet to which Reader Hardt refers: "I Hate to Buy Drugs, But . . . ", published by the National Pharmaceutical Council, Inc., 610 Fifth Ave., New York 20, N.Y.

DATES AHEAD . . .

Instrument Society of America, symposium on methods of instrumental analysis, Auditorium of the Western Society of Engineers, Chicago, Feb. 7-8.

American Management Assn., marketing conference, Hotel Statler, New York, Feb. 7-9.

Chemical Institute of Canada, protective coatings division conference, Royal York hotel, Toronto, Feb. 24; Ritz Carlton hotel, Montreal, Feb. 25.

Drug, Chemical and Allied Trades section of the N.Y. Board of Trade, annual dinner, Waldorf-Astoria hotel, New York, March 3.

FAMOUS LIGHTHOUSES OF AMERICA

Boston Light, America's first lighthouse, was built in 1716 at the north side of the entrance to the main ship channel in Boston Harbor. The scene of several bitter contests for possession during the Revolutionary War, it was destroyed by the British in 1776. A new tower for this famous light was built in 1783 and is still in use today.

Guiding Light to users of electrochemicals is the integrity of Niagara Alkali Company, for over fifty years a pioneer in the development and production of these important materials. You can rely on Niagara for quality in...

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NEWSLETTER

Not only in the U. S. but also in Great Britain has the chemical industry outpaced manufacturing activity in general.

Chemical output there, which has been rising at about twice the average rate for all manufacturing, is expected this year to rise about 10% above the 1954 level. Since 1948, production has increased about 65%, the labor force about 18%. Hence, productivity has jumped about 40%—mainly as a result of new, efficient plants.

Since the war, about £450 million has been invested in chemical and allied industries (excluding oil refining), and the current rate of capital investment is around £75 million/year.

•

A new name to learn: Calumet Nitrogen Products Co. A joint venture of Standard Oil of Indiana and Sinclair Refining, it will build a 300-tons/day ammonia plant at Hammond, Ind., will convert some of the output into nitrogen solutions.

Both parent companies will supply refinery by-product hydrogen as raw material; and each will separately market its share of the anhydrous and solution products—chiefly to Midwestern industrial and agricultural users.

Construction will start in April, is scheduled to be completed by May '56.

•

Gulf Chemical—the United Gas-Electric Bond & Share-National Research petrochemical partnership—has bought a 2000-acre site near Pensacola, Fla. Plant engineering has been completed, Chemical Construction has been awarded the construction contract, and preliminary work on the site is under way.

Products: ammonia, nitric acid, ammonium nitrate, acetylene, polyvinyl and other plastics.

M. A. Abernathy, executive vice-president of United Gas, will head the new company.

•

But sometimes a plant has to go. Late this month Diamond Alkali will close down its caustic-chlorine plant at Pine Bluff, Ark. This move follows the firm's purchase from the government of the Muscle Shoals, Ala., facilities.

•

Highlights of President Eisenhower's health program recommendations (*see p. 15*) of special significance to the process industries:

- Stepped-up research on air pollution via a $5-million appropriations increase to the Public Health Service for a study seeking further data and more effective control measures.
- Extension of the Water Pollution Control Act beyond its June 30, '56 expiration date—with no termination date included and with more teeth in the law.

•

Rolling out of Wood River, Ill., early this week was the first tank car of Standard of Indiana's isooctyl alcohol.

Ten million lbs./year of the product will be made by an oxo

reaction, whereby heptenes (synthesized by catalytic polymerization of refinery gases) react with a carbon monoxide and hydrogen mixture at 300-400 F and 3000 psi., in the presence of a cobalt catalyst, to form eight-carbon aldehydes. These are purified, and isooctaldehyde is catalytically reduced with hydrogen under high pressure to form the corresponding alcohol. The hydrogen and the hydrogen-carbon monoxide mixture are also made by a catalyzed reaction of steam and refinery gases. All in all, six catalysts are employed in the series of processes.

Standard is also planning to make other high-boiling alcohols by starting with different olefins.

Major outlets for these alcohols: vinyl plasticizers, intermediates for synthetic lubricants and herbicides.

•

Simoniz Co. (Chicago) is adding a string to its bow. Having stressed the retail field, it will now add commercial bulk products to its line. The first five: three types of floor wax, a floor cleaner and a furniture polish. Introduced last week at the Plant Maintenance and Engineering Show in Chicago, they'll be pushed through similar exhibitions and an expanded field sales operation.

•

Four mergers—two completed, two on the way:

• Witco Chemical has purchased all the capital stock of Emulsol Corp. (Chicago), will operate it as the Emulsol Division with no change of present management. The week before, Witco acquired a half-interest in Ultra Chemical Works (Paterson, N.J.).

• Foremost Dairies and El Dorado Oil Works have reached agreement on terms whereby the former will take over the latter (*CW Newsletter, Jan. 1*). The plan is contingent upon approval by the California Corporation Commissioner.

• Harshaw Chemical will soon make an offer to Zinsser & Co. (Hastings, N. Y.) whereby it will offer Harshaw common in exchange for all Zinsser's outstanding stock. Details still remain to be worked out.

• Pennsalt has acquired a major interest in Index Chemical (Houston). Index's mercaptans and alkyl sulfides will be integrated with production and sales of Sharples Chemical, a Pennsalt subsidiary.

•

A patent battle may be shaping up in the hormone field. Shortly after a National Institutes of Health scientist described the structures of two Schering Corp. anti-arthritis drugs—metacortandralone and metacortandracin—that had undergone clinical evaluation, Merck revealed that it had made and was investigating the same compounds.

Merck says it is in a position to make the drugs; but Schering has filed patent applications, will likely fight interfering claims.

Pfizer is also likely to get involved, since it has developed—on its own—a fermentation process of making the two new drugs. The company believes that its process may have economic advantages over the synthetic procedures used to date.

•

Despite aspirants for tetraethyl lead's crown (*CW, Jan. 22, p. 54*), TEL still holds sway. Says combustion expert Professor A. D. Walsh, of the University of Leeds, "It is unlikely that any nonmetallic antiknock agent will ever be found which is as effective." He also believes that "no single metal will be found which is superior to lead," but combinations of two different metals may improve antiknock performance.

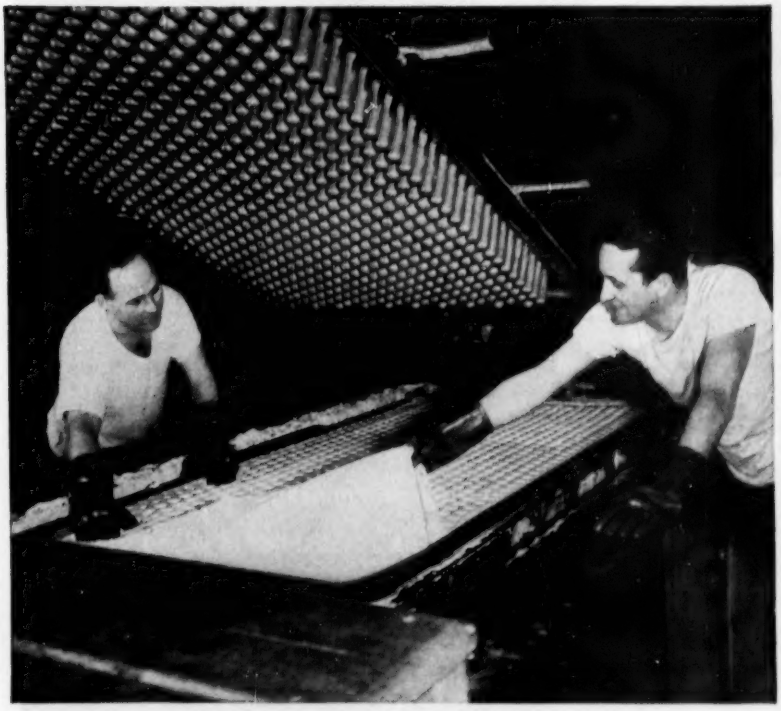
. . . The Editors

FOR EVERY FILM-FORMING JOB

THE KEY IS CMC

AT WORK—The Goodyear Tire & Rubber Company has found CMC to be an excellent mold release agent in Airfoam production. The dry CMC film provides a mold surface that resists shrinkage of the foam and, when wet, permits easy stripping without tearing.

OR PLAY—This young man's bubbles are also dependent on Hercules CMC. This product of Mecklenburg Specialties, Inc. provides a simple but convincing demonstration of the exceptional film-forming properties of CMC, and suggests its wide range of application.



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BUSINESS & INDUSTRY. . . .

HUGHES: Has asked for a closer look at government-owned manufacturing units.

Payoff for Patience

It looked last week as though the government is finally pulling out of competition with chemical firms—a move long awaited by the industry at large. Top level officials of the Defense Dept. are readying an order that would transfer the power to decide whether or not to continue commercial operation of certain facilities (such as paint manufacture) from the Secretary of the Navy to the Secretary of Defense.

As for nondefense agencies, Budget Director Rowland Hughes, in a memorandum to all departments and agencies, has asked for a broader and deeper review of all current operations by April 15. Three months later, each department will be asked to advise "how many can be reasonably discontinued," how many are essential.

The criterion: public interest. Commercial activities should be stopped "unless, as shown by the evaluation, it would not be in the public interest to procure products or services from private enterprise through ordinary business channels."

There have been several notable instances where the government has already withdrawn from competition with the chemical industry with (e. g., sale to Diamond Alkali of the Muscle Shoals, Ala., chlorine plant, and the recommended disposal of the synthetic rubber complex, *CW, Jan. 29, p. 14).*

The directive under which Army, Navy and Air Force officials have been examining their commercial-type operations, however, gave each Service Secretary the final say-so on whether these activities should end. With transferal of such authority to Defense Secretary Wilson (whose staff has been noticeably unsympathetic to unnecessary commercial operations) the number of such decisions to end operations should pick up.

And if this isn't enough of a stimulus, the Eisenhower Administration should have additional ammunition supplied soon in the Hoover Commission's report on the effect of government competition on the economic health of the nation. It seems likely that the Hoover group will recommend discontinuance of all nonessential government production units as quickly as possible.

How Much 'Hurt'?

Within three weeks, the U.S. Tariff Commission must render a ruling that may slam the door against potash imports from Soviet-run East Germany.

If the commission decides—on the basis of evidence received at last week's fireworks-studded hearing—that U.S. potash producers are being "hurt" by those shipments from East Germany, then an antidumping penalty of $7/ton will be levied on those imports. It's expected that this would neutralize the present East German price advantage in U.S. Atlantic Coast ports, where the imported potash has been selling for about $29/ton compared with the $36 domestic price.

But even more important is the precedent that would be set for all U.S. producers of chemical products. The industry can regard this case as a test of the protection that can be expected from the Tariff Commission under current GOP management.

At issue: whether the antidumping penalty is to be exacted whenever a domestic industry is "injured," or only when the injury is "substantial."

Arguing for the former interpretation, officers of the six principal potash producers in the U.S. testified that the alleged dumping—which has already been confirmed by the U.S. Treasury Dept.—would cost them about $2.5 million/year. They explained that the area in which East German potash has a price edge—a 300-mile-wide strip along the Atlantic—now accounts for 40% of their sales.

Spokesmen for importers insisted that the Antidumping Act should apply only when material injury is proved. They drew from opposing witnesses an admission that the U.S. potash companies' sales had increased each year except in 1953.

Long Lever on Wages

If labor costs figure heavily in your company's long-range growth plans, you have reason to watch what's happening to the 19-year-old Walsh-Healey Act, which authorizes the setting of minimum wage rates on government contracts.

Though seldom applied to chemical companies directly, this controversial New Deal law has a roundabout but inevitable effect on chemical payrolls, particularly in certain parts of the country. Walsh-Healey wage determinations have been applied to a number of process industries (such as drugs and pharmaceuticals, paints and varnishes) and to certain industries that are major customers for chemical products (notably textiles); and now may be applied to at least one basic industry that supplies raw material for many chemicals—namely, soft coal mining. Along with the federal minimum wage law, this act has a big influence on wage levels throughout the nation.

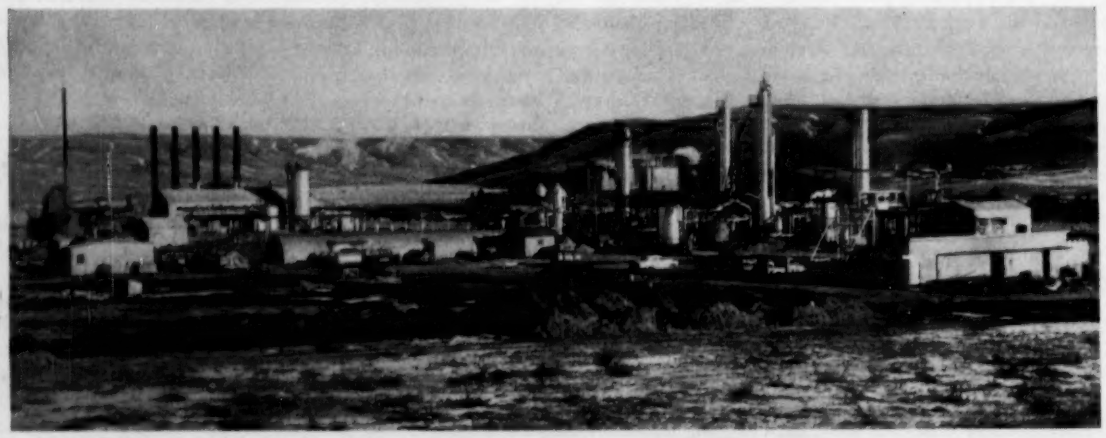
Original purpose of the law: to enable unionized, high-wage companies to bid for government work against nonunionized competitors. This law was enacted shortly after the Supreme Court turned thumbs down on the old National Industrial Recovery Act, which was aimed at establishing standard wage rates in each principal industry. In its earliest days, it was used to prevent wage undercutting by employers. More recently, it has had the effect of narrowing the spread between wage rates in the North and South.

Tug-of-War Looms: This year, the W-H Act seems to be the object of a tug-of-war in national politics, with labor union people pulling for wider and more liberal usage of the act and management hauling in the opposite direction. Here's what's bringing matters into focus:

- John L. Lewis—who's often been in the headlines for his roars against governmental "interference" in the affairs of his United Mine Workers—is appealing for federal aid to keep coal wages high. This week, he's in the unfamiliar role of petitioner to the government, urging Secretary of Labor James Mitchell to set basic wages to be paid by bituminous coal operators on government contracts.
- Southern cotton textile firms are going into U. S. District Court in Washington to answer a government challenge to their previous move that blocked the setting of a proposed $1/hour minimum wage for their industry. The rate was ordered several years ago by the late Maurice Tobin, then Secretary of Labor.
- Some congressmen—particularly those from the low-wage Southern states—may seek repeal of the Secretary's wage determination authority. This step is especially likely if Congress votes a higher general minimum wage of 90¢ or more. The idea: to make this minimum apply to Walsh-Healey cases so no higher rate could be set.

Lewis Bids High: Lewis's move is directed at the Tennessee Valley Authority—a part of the federal government itself. He accuses TVA of buying coal from nonunion operators who underbid on contracts because they pay wages as much as $1/hour below the UMW scale. Generally, W-H wage settings have been close to the federal minimum wage; but Lewis is asking for rates ranging from $2.01 in Alabama to $2.34 in Montana.

So far, Mitchell has been fighting to uphold his power to use this law. It's the tussle with the textile makers that may settle, once and for all, just what can be done under the act.



More Sulfur for Canadian Uranium Mines

COMING INTO OPERATION last week were new units at Shell Petroleum Co.'s Jumping Pond (Alberta, Canada) sulfur-from-natural gas plant. Total production of sulfur now exceeds 80 tons/day; a large portion of the new capacity will be funneled by rail and barge to the Gunnar Mines at Beaver Lodge (on the shores of Lake Athabaska, Saskatchewan) for conversion into sulfuric acid needed in uranium mining.

CHRIS GRUBE, MC GRAW-HILL

ACME NEWSPICTURES

ANTIMONOPOLISTS HOWREY AND BARNES (PRESENT), KEFAUVER (ABSENT): In lawyers' lair, they clash over . . .

Trust Busting: What's Par?

The shape of things to come in wording and enforcement of U.S. antitrust law—that's what's being talked up in business and governmental circles this week as the time comes for the Republicans' promised attempt to bring the federal antimonopoly program up to date.

And one thing that pops up often in these preliminary discourses: the flood of recent company mergers, of which the chemical industry has had enough to attract special attention, along with the automotive and steel industries.

When New York lawyer Herbert Brownell, Jr., became Attorney General back in 1953, he told the country that 1955 would be the year of reckoning for antitrust problems in his Dept. of Justice. Developments during the past fortnight indicate that the reckoning is close at hand:

• Brownell is asking the 84th Congress to raise the maximum fine for violating the Sherman Antitrust Act to $50,000, and to give the federal government the right to sue for actual damages caused by antitrust law violations.

• In the seventh annual meeting of the New York State Bar Assn.'s Section on Antitrust Law, Sen. Estes Kefauver (D., Tenn.) clashed—by proxy—with Federal Trade Commissioner Edward Howrey and Antitrust chief Stanley Barnes over how well the GOP administration has been enforcing the antimerger clauses of the Clayton Act.

• Brownell's special advisory committee—after more than a year's work—is putting the finishing touches on its report on how to make the antitrust laws both modern and effective.

Senate Was Reluctant: Brownell's two proposals aren't brand new. The $5000 fine set when the Sherman Act was passed in 1890 has never been raised, though Congress has been considering such proposals for nearly 50 years. Similar requests have passed the House several times, only to die in the Senate.

WIDE WORLD

JUSTICE DEPT.'S BROWNELL: To Congress, a stiffer-penalty plea.

On his other request, Brownell says the government is the largest single buyer in the country and stands to be subjected to heavy costs from antitrust violations—as he avers has happened in the past. He says that during an 18-month period in the late 1930's, the government took a loss of more than $350,000 on purchases of rubber tires and tubes due to illegal bidding.

At the lawyers' meeting, Kefauver—a co-author of the 1950 antimerger act—charged that government enforcement of antimonopoly laws has all but broken down. Kefauver's speech—read in his absence by the chief counsel of the Senate antimonopoly subcommittee—stated that some 3000 mergers have been effected since that 1950 amendment to the Clayton Act, and criticized the FTC for having issued only three complaints under that clause, and the Justice Dept.'s Antitrust Division for having publicly opposed only one merger.

In their turns at the microphone, Howrey and Barnes defended their agencies' records, promised continued "vigorous enforcement" of the law under a "rule of reason." Howrey said whether the current merger trend is "good" or "bad" can't be decided until completion of a detailed FTC study started last fall. Barnes indicated that a number of proposed mergers had been called off after his division had advised that the moves would be illegal.

EXPANSION . . .

Newsprint: International Paper Co. will build a $20-million newsprint mill "somewhere in the South" with an annual capacity of 100,000 tons. Estimated date of completion: late 1956 or early 1957. Consumption of newsprint within the U.S. last year was 6.1 million tons—up 0.3% over 1953, is expected to rise this year.

•

Potash: A $15-million deal—whereby a U.S. firm will cooperate with Western Potash Corp. (Montreal) in developing potash deposits in Saskatchewan—was nearing completion last week. Officials of both companies met in Winnipeg to iron out details of the plan; it's estimated that the project will involve processing of over 1000 tons of potash daily.

•

Chlorophyll: The National Chlorophyll and Chemical Co.'s $1-million plant at Lamar, Colo., will be in operation by March 1. Products include cerophyllin-D, and a dairy feed element—protomone.

•

Pulp: North Western Pulp and Power, Ltd. (a subsidiary of North Canadian Oils, Ltd. and the St. Regis Paper Co., New York) will start construction of its proposed $30-million pulp mill at Edson, Alberta, "as soon as spring conditions permit." Capacity: 300 tons/day of pulp.

•

Sulfur: American Sulphur and Refining Co. (Beverly Hills, Calif.) will complete construction of a $1.1-million sulfur recovery plant in Sulphurdale, Utah, sometime this month. Capacity: 100 tons/day of refined sulfur.

COMPANIES . . .

Milner Products Co. (Jackson, Miss.) has purchased the Perma Starch Co. (Illiopolis, Ill.) for $1.5 million. No change is contemplated in either plant production schedules or personnel.

•

New Idria Mining & Chemical Co. (San Francisco) has purchased Strawberry Tungsten Mines for $1,075,000. The mines are located some 75 miles northeast of Fresno, Calif.

•

Niagara Brand Spray Co. (Burlington, Ont.) has acquired Chemical Products, Ltd. (Regina). Niagara, established in 1909, formulates insecticides, fungicides and herbicides. Chemical Products has been supplying argicultural chemicals to western Canadian farmers since 1935.

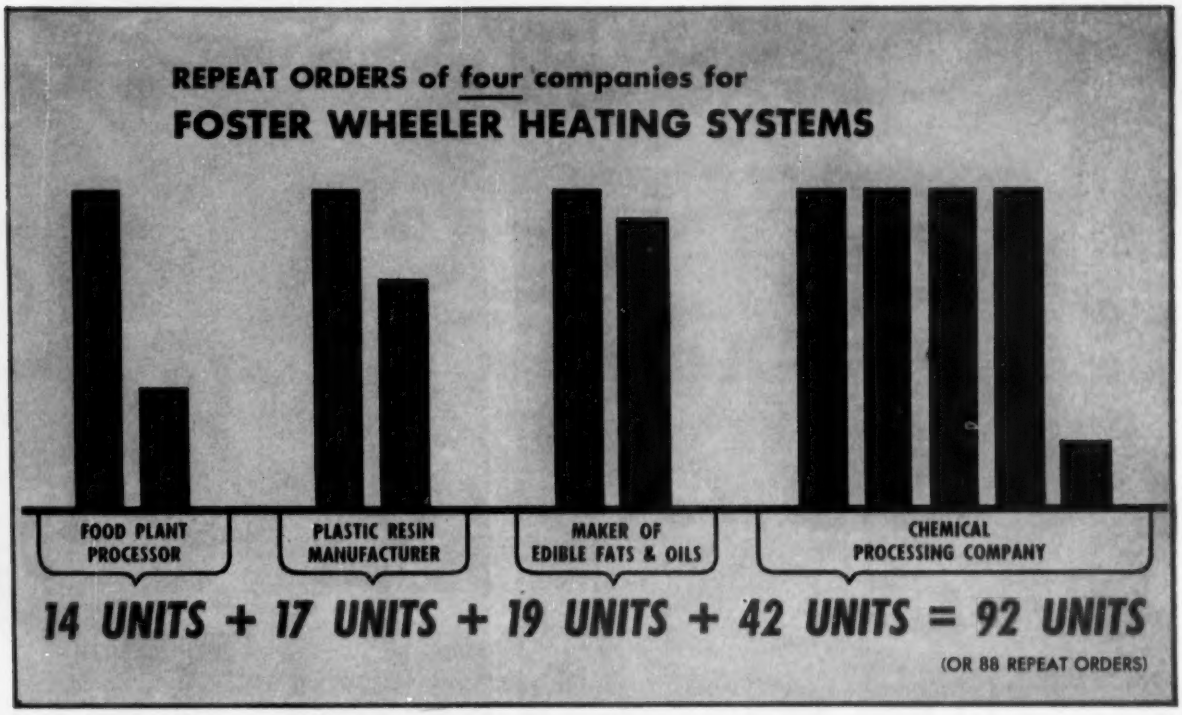
•

More 1954 company statements were issued last week. Included:

- Allied Chemical & Dye Corp.: total sales, $530.7 million; net profit, $43.0 million; earnings per share, $4.80.
- Hercules Powder Co.: total sales, $187.5 million; net profit, $14.1 million; earnings per share, $5.10.
- Devoe & Raynolds: sales, $48 million; net profit, $1.3 million for a fiscal year ending Nov. 30.
- Air Reduction Co.: sales, $123.3 million; net profit, $6.3 million; earnings per share, $1.86.
- Freeport Sulphur Co.: net profit, $10.0 million, and earnings per share, $4.20.
- American Agricultural Chemical Co.: six-month net profit (fiscal year ends May 31), $716,275; earnings per share, $1.14.
- Procter & Gamble: six-month net profit, $31.9 million; earnings per share, $3.30.
- Olin Mathieson: sales, $480 million; earnings per share, $3 (estimated).

More Responsible, Less Trouble

PEDESTRIANS and motorists aren't the only employees with a stake in traffic safety in Dow's Texas Division plant. Utility men—such as D. Helms *(above)*—are ever-conscious of promoting safe driving. Reason: they double as gatemen during rush hours—a move aimed at spreading out responsibility for safety among more employees.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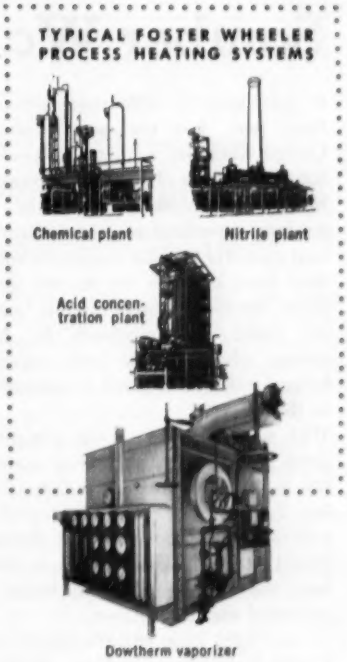
The satisfactory operation of the four different Foster Wheeler installations charted above — and the eighty-eight repeat orders that followed — establishes a record in successful processing performance that speaks for itself! For information, write Foster Wheeler Corp., 165 Broadway, New York 6, N. Y.



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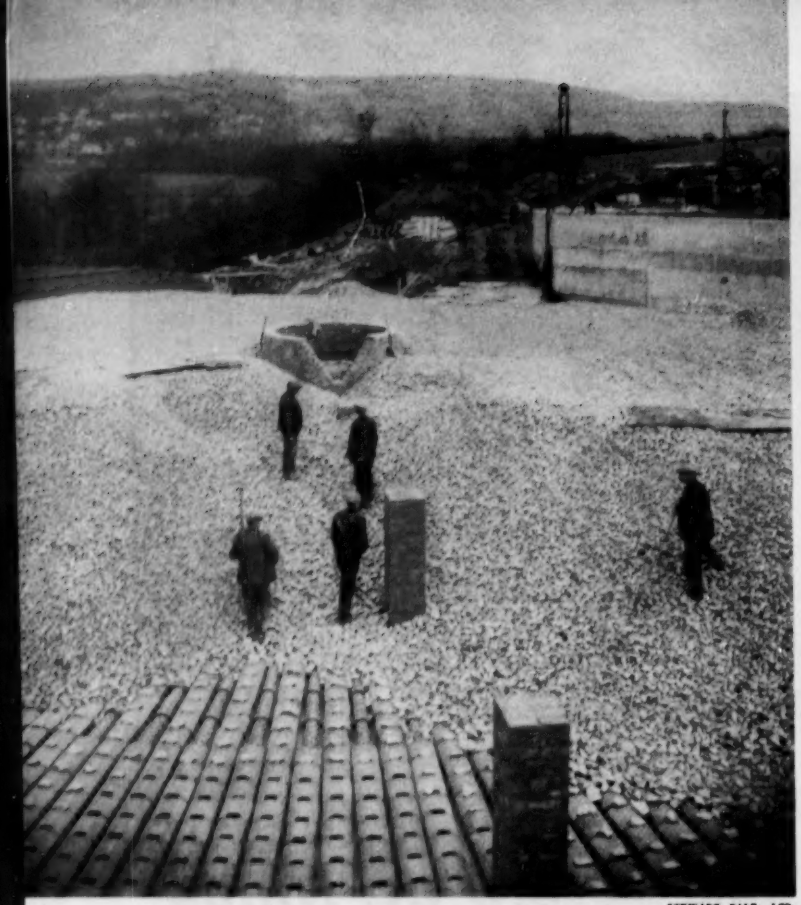

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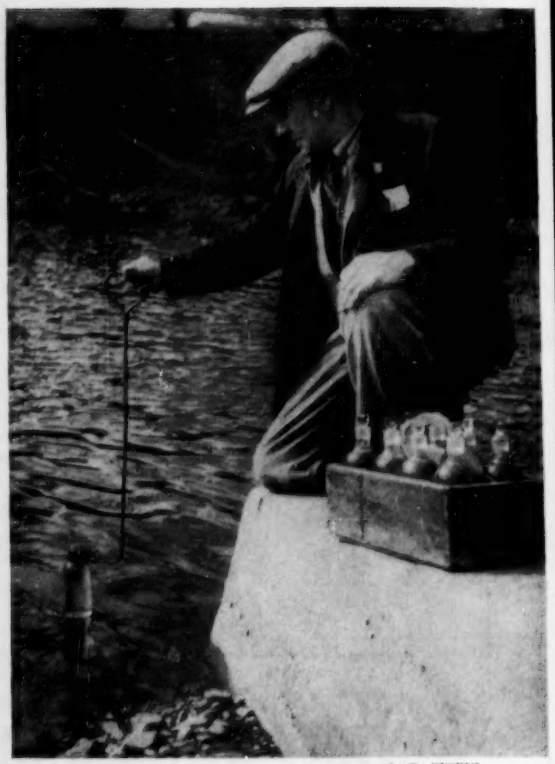

S. W. KENYON

MONSANTO'S ANTIPOLLUTION WORK IN WALES: For U.S. chemical industry, Britain's strict control laws are . . .

Somber Warning: It Might Happen Here

It may seem a trifle demanding on their part, but the people of the United Kingdom want to have—all at the same time—both the economic benefits of industrialization and the outdoor attractions of a nonindustrialized country. And the lengths to which they have gone to try to nail down these seemingly incompatible assets are being eyed enviously by U.S. groups who'd like to have rigorous federal pollution control requirements in this country.

With some members of the new Congress feeling that the time is coming for legislation along this line (*CW, Jan. 1, p 41*), CW has taken a close look at what's going on in Britain, finds that national pollution laws there have come to be a limiting factor in industrial expansion.

The "tight little island" already has a tight little law on stream pollution, known as the Rivers Prevention of Pollution Act. And Parliament now is ready to consider proposals for stringent laws aimed at cutting air pollution by 80% in the next 10-15 years.

Salmon, Scenery, Phenol: One management man close to British pollution problems is W. H. Garrett, director of Monsanto Chemicals Ltd., whose firm has completed a $2-million waste disposal plant that will cost possibly as much as $200,000/year to operate.

For chemical companies, says Garrett, the British pollution law means just this: "If a new process cannot be controlled or economically operated without emitting harmful wastes—we simply have to find another process."

The $2-million treatment facilities have been added to Monsanto's North Wales plant, located in an area noted for its scenic beauty and the River Dee, one of the best salmon rivers in Britain. This stream also is the source of water for the city of Chester (pop. 48,229). Local residents formerly had complained that plant effluents had spoiled scenery, put a "chemical" taste into the fish, and made the drinking water taste of phenol.

No Martyrdom: For that taste, Garrett contends, Monsanto was not to blame. What the townspeople discerned, he maintains, was chlorophenol formed "from reaction between our permissible waste—with a phenolic content that could not be tasted—and the chlorine used by the water company for purification."

Investment in that treatment plant illustrates British industry's attitude toward pollution abatement. Industry, Garrett tells *CW*, doesn't feel that it's a martyr.

"Treatment and disposal of effluents must be considered an integral part of the chemical industry," continues Garrett, who serves as Trades Effluent Panel chairman for the Federation of British Industries (similar to the National Assn. of Manufacturers in the U.S.).

Thus it can be seen that Britain's antipollution law is by now pretty well accepted on all sides. In essence, this law makes it an offense to discharge harmful or polluting matter into any

ATLAS chem-memos

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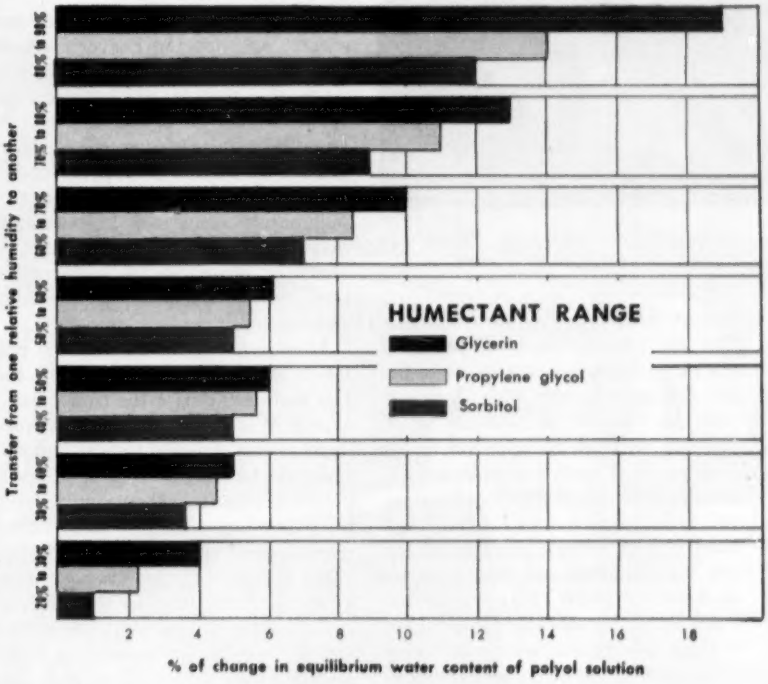
SPAN 80 has high water-holding power, which is desirable in making many types of products based on oil, in which water must be incorporated with stability at ratios varying from as low as 1% to as high as 90% by weight.

Over 100 manufacturers of cosmetics and pharmaceuticals use SPAN 80 in making hand creams, ointments, lotions, hairdressings and baby oils. While it is a W/O emulsifier when used by itself, it is also used in conjunction with hydrophilic (O/W) emulsifiers in making oil-in-water products—assisting in attaining stability of the emulsion and also in reducing the amount of mixing necessary.

SPAN 80 and other closely related Atlas products are used as additives in making many metal-preservative types of oil to meet government specifications. While soluble in oil, these products apparently "pull" water out of contact with the metal, surrounding it with oil.

Makers of dry-cleaning detergents use SPAN 80 as a means of introducing small percentages of water into the regular dry cleaning solvent, so that water-soluble soil can be removed from clothes at the same time as grease spots.

Formulators of textile processing materials use SPAN 80 to improve the lubricating and softening properties of mineral oils in treating various fibers. It is also used alone to increase the oil-solubility of normally oil-insoluble lubricants, softeners and antistatic agents. With other emulsifiers, SPAN 80 is employed in emulsifying scale waxes and in making stable self-emulsifying wool oils. For trial samples or detailed information related to your field, write to Atlas Chemicals Department.



Products conditioned with sorbitol have lower change in moisture content

One of the most important characteristics of a moisture conditioning agent is its *humectant range*—that is, the extent to which it permits changes in moisture content. This property is especially significant when choosing such an agent or "humectant" for cosmetic creams, tobacco, paper, cellulose and glue specialties.

The chart above illustrates sorbitol's narrow humectant range . . . its superior moisture stabilizing ability in comparison with other polyols. The length of the bars shows the change in equilibrium moisture content of a polyol solution when transferred from one relative humidity to another at the same temperature. Note that under all humidity conditions, sorbitol solutions exhibit smaller moisture change than other polyol solutions.

Moreover, sorbitol loses or gains moisture *at a slower rate* than other polyols when products in which it is used are transferred from one humidity condition to another.

For more detailed information on sorbitol's properties and applications, write for the booklet, "Atlas Sorbitol and Related Polyols."

OLUF NISSEN

MONSANTO'S GARRETT: "Right way to treat effluent is to have none."

stream—with penalties for violations. The law permits the continuation of discharge that was going on when the act was passed; but such discharge can't be changed in quantity or in make-up without the approval of the river board. There's a river board, nationally established with local personnel, policing each major river. Each board sets up its own bylaws and control requirements, and keeps tab on all industrial plants along the stream.

All Ways Accountable: In addition to those river boards, a manufacturing company may be held accountable to town and county councils, town and country planning boards, and individual landowners along the river whose "riparian rights" are bulwarked by centuries-old English common law. All these agencies and citizens can go to court to obtain injunctions or sue for damages—and British judges tend to be both stern and severe in upholding those rights. With an injunction, a city or an individual can force a plant to be closed until its waste disposal methods are o.k.'d.

As to air pollution, it was just two months ago that the Beaver Committee made its report, concluding that while the cost of curbing soot and fumes would be heavy, the cost of neglecting this job would be even greater. It estimates that—not counting the effect on health and crops—air pollution is costing Britain some $700 million/year. Its recommendations include a provision for government loans to industry to help factories install smoke-cutting equipment.

How seriously the British take pollution control can be gauged by the fact that even during the dark days of World War II—when chemical production was directly tied to national survival—the government felt compelled to insist that Monsanto provide for waste disposal before undertaking much-needed expansion.

Up to now, U.S. congressmen have given scant thought to the idea of such zealous federal regulation; but rapidly increasing population and industrialization will tend to give this policy more appeal in Washington.

G. W. KENYON

EFFLUENT STORAGE LAGOON: Near River Dee, a safeguard for Welsh scenery.

LEGAL

'Second Front' Opened: American TCP Corp. gained a point in its lawsuit with Shell Oil last week; but now it appears that American TCP will have to divert some of its legal counsel to a "second front." The company has been sued by R. M. Hollingshead Corp. (Camden, N.J.) for alleged failure to buy "TCP Concentrate" made for American TCP by Hollingshead under a 1953 contract. Hollingshead says that last spring, American TCP complained that it had been losing sales because of late deliveries from Hollingshead; and that the parties then agreed that Hollingshead would build up an inventory for American TCP's use. Last December, Hollingshead charges, American TCP stopped buying from the Camden firm, leaving on Hollingshead's hands 28,320 4-oz. cans at 6.7¢ each; 24,849 pint cans at 17.4¢; and 4296 quart cans at 28.9¢ apiece. American TCP denies that it has broken the contract, says it's still buying, and terms the suit "unfounded."

In its battle with Shell over the "TCP" tradename, American TCP won the right to keep its original charges intact. The federal court at New York denied Shell's motion to strike out some of the charges.

•

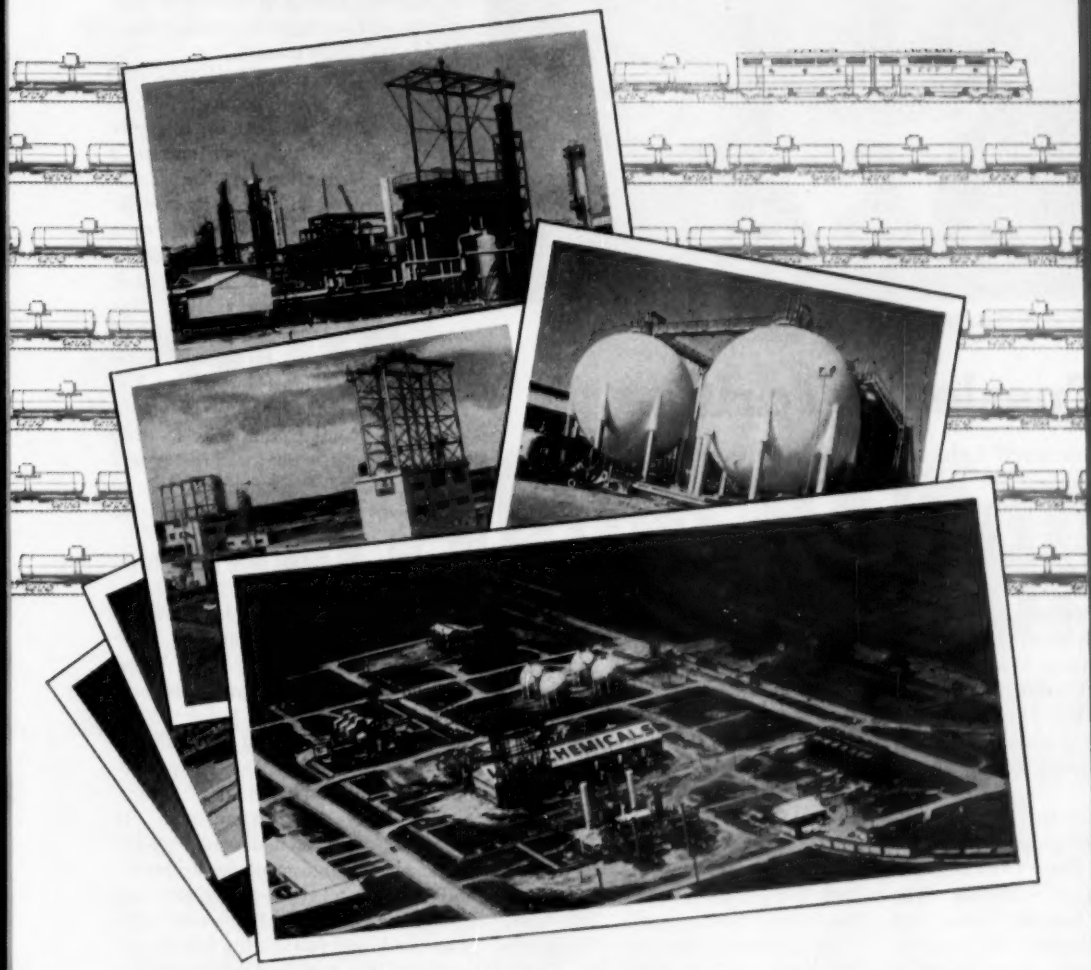
They Don't Give Up: The U.S. Supreme Court has turned down three bids (by citizens of California, Louisiana and Oklahoma) to have water fluoridation declared unconstitutional, but that isn't discouraging the antifluoridation forces in other areas. Last week, the antifluoridation faction in Chehalis, Wash., averred it would ask the high court to overrule the recent decision by the Washington state supreme court upholding the city's right to fluoridate its water supply.

•

Fireworks Suit: Two residents of Hope, Ark., have brought $500,000 suit against Unexcelled Chemical Corp. (New York) over injuries allegedly sustained during use of fireworks made by the firm. Unexcelled says that it will contest this suit; notes that in an unsuccessful suit against the retailer in Arkansas, there was evidence that claimant had been "experimenting with explosives for some time."

Another 1,000 tons of NH_3 per day!

added to world production through Chemico-designed plants *completed during 1954*



Ammonia plants placed "on-stream" in 1954 for **Phillips Chemical Company, Lion Oil Company, American Cyanamid Company, and Sherritt Gordon Mines, Ltd.** add more than 1,000 tons daily ammonia production to the already impressive total capacity of Chemico-designed plants.

Chemico provides a *complete* project service in designing the plant, supplying all material, and erecting structures and equipment to produce ammonia from natural gas, by-product hydrogen, or other suitable raw materials.

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CHAIRMAN COOPER: Now hearing testimony that will mean a . . .

New Tussle on Tariffs

In the tariff fight in Washington the chemical industry is united; it's dead set against cross-the-board reductions.

Arguments are mainly statistical — compare wages, plant efficiencies, research costs abroad with comparable rates in the U. S.

In a spacious white and green House hearing room last week, chemical interests told the House Ways & Means Committee how they felt about H.R.1. It was evident that (1) they didn't like what they saw looming, nor (2) did they hesitate to say so to Chairman Jere Cooper.

Confronted by the Eisenhower-backed lower-tariff program, key men from Cyanamid, Dow, Otto B. May, Monsanto, National Aniline, The Manufacturing Chemists' Assn., and The Synthetic Organic Manufacturing Chemists Assn., first identified themselves before the powerful committee, then proceeded to tackle the free-traders' position.

Basic Thread Visible: A myriad of objections to Cooper's Trade Agreements bill were cited by chemical opponents of the measure, but basically their testimony last week shows one chief concern: they're alarmed about the industry's economic future if the present tariff-cutting trend is allowed to continue. And that, some say, is obviously what H.R.1 will do.

Buttressed with facts, figures and examples, no one was vague about what effect low tariffs will have (and are already having) on chemical markets. Dow Chemical Co., for instance, pointed out that low foreign wages and high plant efficiencies are danger signs that the Administration must recognize before it talks lower tariffs.

According to Dow, rates paid its hourly employees averaged $2.60/hour in 1953 compared with France's 78¢/hour, Switzerland's 76¢/hour, West Germany's 64¢/hour, England's 62¢/hour, Italy's 52¢/hour, and Japan's 19¢/hour. In contrast with these low (by U.S. standards) wages, plant efficiencies and research levels overseas are high (they compare favorably with, sometimes exceed, U.S. averages). Consequently, it's evident, Dow asserts, that foreign competitors can easily undercut U.S. prices even at existing duty rates. Too, says Dow, in many instances (like sodium trichloroacetic acid) domestic producers have already been forced out of production by foreign imports.

Not satisfied with this argument, some chemical testifiers built an additional case against the Trade Agreements bill. Despite the over-all high-level operation of the U.S. economy today, most U.S. chemical plants are operating below capacity. In contrast, the European chemical industry is operating at peak. At the same time, U.S. imports of chemicals have been increasing rapidly (500% since 1948). If capacity abroad is increased, they reason, and tariffs are lowered, Europe could flood U.S. markets.

Speaking for the organic chemical industry, SOCMA's president, Samuel Lenher maintained that organic producers as a whole won't oppose a three-year extension of the Trade Agreements Act so long as its exercise is limited to reduction of tariffs on a genuinely selective basis up to 5% a year. The difficulty is that present trade agreement procedures just aren't keyed to "selective revision" from the viewpoint of national security. And the Cooper bill's three-fold approach to cutting tariffs (it would grant the President authority to drop tariffs 5% each year for three years) isn't reasonable, appears to be an "objective with little reason for existence."

Nor are these the only grounds on which opponents of H.R.1 stood vis-à-vis the House Ways & Means Committee. Staunch protectionists, like the chairman of Nation-Wide Committee of Industry, Agriculture and Labor on Export-Import Policy—Oscar Strackbein, are peering beyond the economic impact of the trade-tariff bill. "This bill is much more than a tariff bill," testified Strackbein. "It contains provisions that would go far to deprive Congress of its authority and responsibility to regulate our foreign commerce." Reference here is to the broad powers the bill would confer on the President, granting him authority to enter into trade agreements for an additional 3-year period with further authority to adjust tariff rates up or down by 50% of current rates. Strackbein feels the bill would have the State Dept. using tariffs as a diplomatic lure in foreign policy.

How H.R.1 will look to Congress when it comes out of committee onto the House floor later this month is still pretty much anyone's guess. But one thing's certain: it's sure to stir up one of the hottest fights this session.

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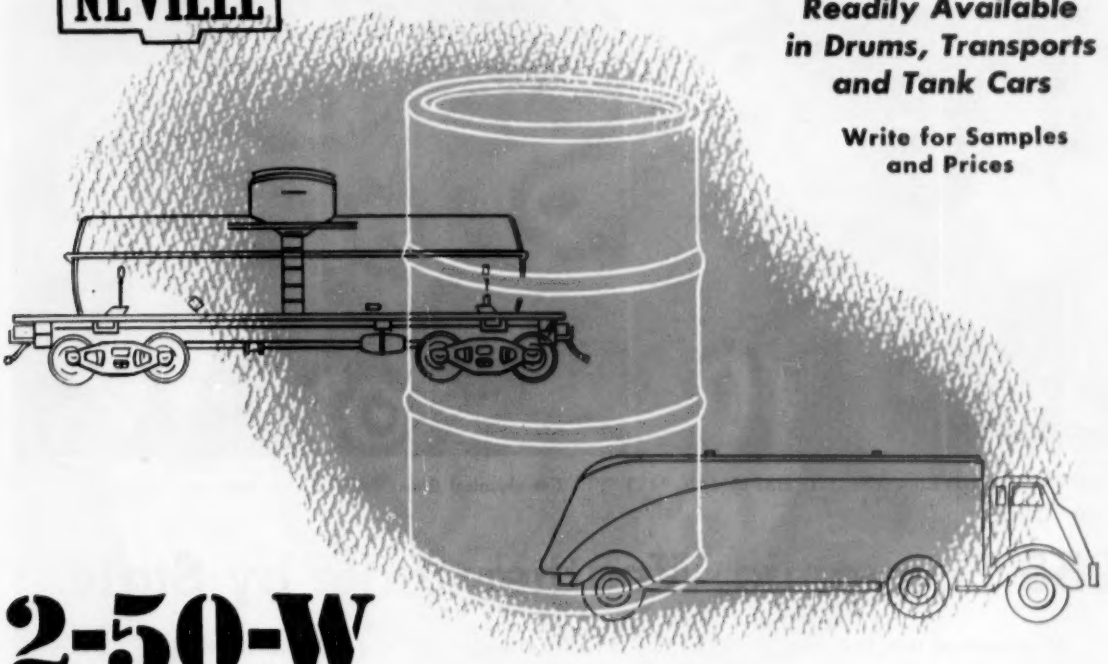

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Typical Properties

Specific Gravity	.875
Distillation:	
Initial	158°C.
50%	170°C.
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End Point (Dry)	191°C.
Flash Point, T.C.C.	105°F.
Color, Saybolt	+26
Acid Wash Color	8
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Aniline Point (Mixed)	24°C.

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WIDE WORLD

GOVERNORS SHIVERS, KNIGHT, HARRIMAN, MEYNER: For chemical firms, the bills they back may determine . . .

1955 Economic Weather, State by State

Unlike the proverbial rain that falls equally on the just and unjust, numerous measures pending this week, before the 42 state legislatures now in session from Maine to California bode more or less good for the chemical industry than for various other branches of the body politic.

Such bills, of course, are in the minority. As the lawmakers begin holding hearings on this year's crop of resolutions, they're concerned mostly with the more general bills that will help determine the economic weather ahead for farmers, miners and grocers as well as for industries. In this category: income and property taxes, labor-management relations, and public works.

Certainly those measures can have plenty of meaning for chemical companies. Firms in these states can't help but perk up and take notice of such proposals as the income tax rise urged by Maryland's Gov. Theodore McKeldin, a business tax increase suggested by Washington's Gov. Arthur Langlie, and the $750-million highway bond issue advanced by New York's Gov. Averell Harriman.

Chemicals Singled Out: But chemical companies will be particularly alert about the bills that seem to single out this industry for special treatment, one way or another. Prime example of this may be the scheme outlined by veteran Houston legislator Carlton Moore in opposition to the plan offered by Texas Gov. Allen Shivers for raising more revenue. Moore holds that additional taxes might well be levied against certain industrial groups, including chemicals, graphite, manganese and gypsum.

Several other proposals of chemical interest are up for study among lawmakers of Texas. One would require chemical analysis of all fungicides and insecticides before they would be allowed to be sold in the state; and the state's health department has been preparing a set of bills designed to cover both air and stream pollution. Advance information is that one of these bills will provide that before any new industrial plant can be built, blueprints—showing how smoke and fumes are to be handled—must be submitted to the department's engineering division.

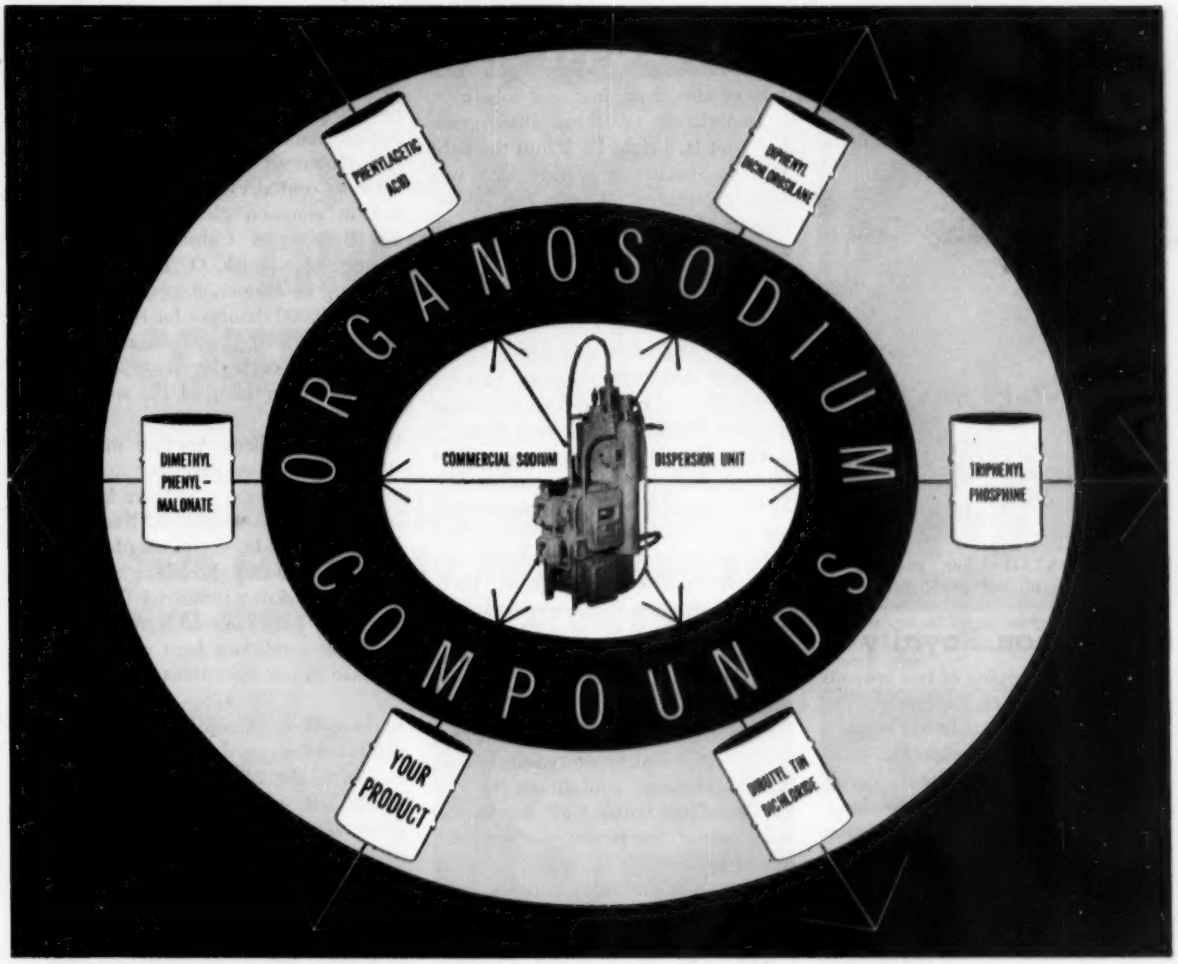
Processing firms for which water is a big need have a stake in the eight bills that have been drafted by the Texas Water Resources Committee. That committee is also suggesting a constitutional amendment on this topic, and that, too, will be considered by the legislators.

All Seek Funds: Another state that's worried about future industrial water supply is New Jersey. Gov. Robert Meyner is understood to favor a bill—already passed by the state senate—calling for New Jersey to enter into a tri-state compact with New York and Pennsylvania for increased utilization of Delaware River water. The plan includes construction of reservoirs in all three states and damming of the river at Wallpack Bend.

Nearly all state governments find they'll need to raise more money this year to meet increased budget requirements. California Gov. Goodwin Knight estimates that his state will have to ante up an additional $80.2 million this year, but he hopes this can be done without boosting corporation or ad valorem tax rates. Instead, he's looking to the legislature to pin the bill on increased luxury taxes.

It's not only in the heavily industrialized states that chemical process companies can be affected by state laws now in the budding stage. Out in Iowa, the legislature is studying a state tax commission recommendation for putting a 2% sales tax on fertilizer and agricultural limestone, in addition to other products that up to now have been exempted from such levies. Also in Mississippi—whose legislature is expected to hold a special session this year—there's a possibility that the solons may remove the exemption on fertilizers.

With recent expansion programs having put more chemical plants in operation in more states, and with so many states looking for new revenue sources, chemical companies have more reason than ever before to keep posted on what's brewing in the state capitols.



Organosodium Compounds (R-Na) Open New Frontiers

Microscopic sodium particles dispersed in inert hydrocarbon media now make practical the production on a commercial scale of organosodium compounds such as phenylsodium and benzylsodium. These compounds are characterized by a direct carbon to sodium bond and are obtained by:

1) Replacement of a halogen
$$RCl + 2Na \longrightarrow RNa + NaCl$$
2) Substitution for an active hydrogen (metalation)
$$RCH_3 + R'Na \longrightarrow RCH_2Na + R'H$$
$$2RH + 2Na\ (Dispersion) \longrightarrow RNa + H_2 \uparrow$$
(sometimes possible)
3) Addition to an activated double bond
$$R_2C = CR_2 + 2Na \longrightarrow R_2C(Na) - CR_2(Na)$$

As is illustrated above, organosodium compounds, such as phenylsodium, are useful tools in three types of syntheses:

a) addition reactions
$$RNa + R_2C = O \longrightarrow R_3CONa$$
b) metalation reactions
$$RNa + R'H \longrightarrow R'Na + RH$$
c) Wurtz type reactions
$$RNa + R'Cl \longrightarrow R'R + NaCl$$

Technical literature contains numerous references to organosodium compounds as reaction tools, but only now are commercial applications possible through the development of sodium dispersions. Also, these dispersions may often be substituted in reactions where the literature references use alkoxides, sodamide, sodium hydride, potassium or lithium — and sodium is available in large scale quantities.

Consult with our technical sales staff if the manufacture and use of organosodium compounds interests YOU. Send for our technical booklet, "Sodium Dispersions."

Metallic Sodium is manufactured by National Distillers Chemical Co. at Ashtabula, Ohio and sold by:

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SWIFT'S MATTIL: For packers, he recovers some of lost profit per pig.

Recognition, Royalty

Simultaneous dropping of two lawsuits in federal courts at Richmond, Va., and Chicago last fortnight has ended a two-year dispute over chemical processes for lard improvement, leaves Swift & Co. sure of a top place—alongside Armour & Co.—in this particular field of food chemistry.

Basis for the out-of-court settlement: Procter & Gamble will pay to Swift an undisclosed sum; Swift is calling off the patent infringement suit it had filed in Richmond; and P&G is abandoning its declaratory judgment suit at Chicago.

In turn, Swift has agreed to license P&G under the 10 lard improvement patents (Nos. 2,625,478 to 2,625,487, inclusive) that were issued Jan. 13, '53, to a team of Swift's research chemists headed by Karl Mattil.

Pure White, No Smell: Those patents cover certain chemical processes for modifying the crystal structure of lard to enhance its frying and baking properties, fortify it against odors and rancidity.

Armour's R. J. Vander Wal and L. A. Van Akkeren got the first big patent (No. 2,571,315) in this field back in Oct. '51. In their process, an alkali metal alcoholate (Armour has been using sodium methoxide) is the catalyst for the molecular rearrangement. Swift's researchers—whose patent application dates ranged from Sept. '50, to May '52—used various catalysts, including alkali metal, alkali metal hydrides and hydroxides, alkaline earth metal alcoholates, sodium amide, and salts of zinc, lead, iron and cobalt.

Importance of these discoveries: they put lard right back into the fight for the shortening market that was largely captured 20 years ago by the makers of hydrogenated vegetable oil shortenings. Before then, lard—as the shortening used by almost every chef and housewife—accounted for almost 20% of the value of a hog on the hoof; after the vegetable oil victory in the mid-30s, that ratio dropped to only about 7%, and meat packers were selling lard for less than it cost them.

Prior Use Argued: In its complaint filed at Richmond in September '53, Swift charged that P&G's manufacturing and distributing subsidiaries had been using the Mattil technology ever since the patents were issued. P&G denied infringement, contended that Swift's patents were invalid because "the process and improvements patented had been known and used in this and foreign countries prior to the alleged invention." The defendant firm also asserted that Swift had made and sold shortenings conforming to the Mattil patents without affixing to the label any of the patent markings required by law.

The settlement represented a substantial triumph for Swift, in that it has won recognition of the probable validity of its patents as well as royalty for P&G's use of Swift know-how. To P&G—which also processes cottonseed oil—the pact means continued activity in both types of shortening.

Drugs for Cuba

An Italian pharmaceutical firm, Carlos Erba Laboratories, plans to build a drug-manufacturing plant in Havana, due for completion within the next two years. Reason for the move, according to president Count Edoardo Visconti di Modroni Erba, is the recent heavy demand for pharmaceuticals in the entire Caribbean area.

Site of the proposed plant is a 5000-sq.-meter tract conveniently located to both rail and port facilities; Erba intends to use Cuban labor and technicians to build and operate its plant; Cuban capital will be included in the total cost of construction.

Erba—a 100-year-old firm—has been marketing pharmaceuticals in Cuba for more than 60 years.

LABOR

Strike Damages: Contending that picketing by members of seven AFL unions resulted in a $500,000 loss for the company between Jan. 3 and 15, Owens-Corning Fiberglas has brought suit in common pleas court against the Building & Construction Trade Council of Newark, O. The company is asking an injunction against picketing, $500,000 damages for the first 12 days of picketing, and an additional $35,000 for each day that picketing continues after filing of the suit.

•

Workers Recalled: Another milepost along the fuller-employment road: At least 85 employees who were laid off last year are being recalled this week at the Ashtabula, O., plant of Union Carbide's Electro Metallurgical Co. division. Explains Industrial Relations Director John Kanne, succinctly: "Business conditions here warrant an increase in our operations."

•

Right-to-Work Coup: A move that will boost his popularity among union leaders is the bill introduced in the House last week by freshman Rep. James Roosevelt (D., Calif.). While others debate about the merits of the so-called "right-to-work" laws that are in force or under consideration in various states, Roosevelt is pushing for a coup that would strike down all those state statutes at once. His bill would amend the Taft-Hartley law

WIDE WORLD

REP. ROOSEVELT: On right-to-work laws, he asks nationwide ban.

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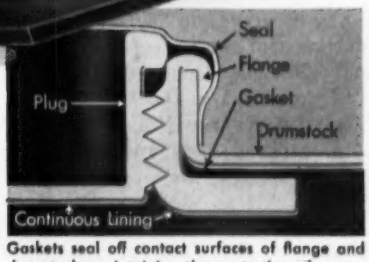
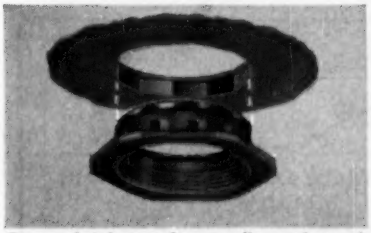
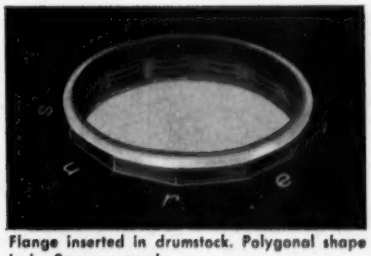
—another development in the Tri-Sure program to help shippers solve their container problems



Gaskets seal off contact surfaces of flange and drumstock, maintaining the protection of a continuous lining.

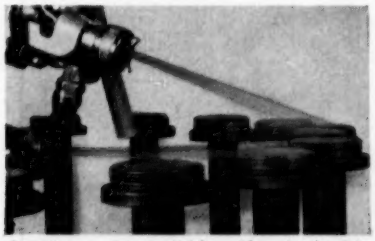


Drumstock is bent to form a collar so that neck of flange can be keyed to container when inserted.



Flange inserted in drumstock. Polygonal shape locks flange securely.

Tri-Sure Polygonal Closure—designed for products that require additional protection. Polygonal Flange is completely enclosed in polyethylene, and used with Tri-Sure Polyethylene Plug.



Spraying coating on Tri-Sure Plugs in the Tri-Sure factory. This *Tri-Sure factory coating*—to your exact specifications—is your assurance of obtaining coated fittings that give you maximum protection.

If your product requires protection from contact with metal, it can be shipped with perfect security in lined containers that are equipped with the new *Tri-Sure coated Polygonal Flanges*, and coated or plastic plugs.

This new Tri-Sure Flange, designed especially for lined containers, completely shields the contents of the drum from the metal of the fitting, so that the protection of the lined container is *complete*. At the same time it maintains all of the exclusive features of Tri-Sure Closures which safeguard the contents from leakage, tampering and contamination.

The Tri-Sure Polygonal Flange can be used in your full line of containers—coated, lithographed or standard—without requiring any new tools in your filling line. It can be supplied zinc-plated, tin-plated or unplated—single-coated or double-coated; or with a polyethylene overlay. It is also available in aluminum.

When ordering coated flanges and plugs, take advantage of our extensive experience in the development of coated fittings by specifying *Tri-Sure factory coated*. The fittings will be coated to your exact specifications with perfect uniformity and thorough coverage of the threads.

The Tri-Sure Closure using the Polygonal Flange, with or without overlay, and plastic or metal plug has I. C. C. approval.

Always specify **Tri-Sure** Reg. U. S. Pat. Off. **CLOSURES**

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in such a way as to guarantee the legality of union-shop agreements in all plants engaged in interstate commerce.

•

Pattern Steepens: A slightly steeper wage pattern may be shaping up in the chemical process industries, judging by contracts going into effect this week. Throughout the last half of 1954, wage increases averaged very close to 5¢/hour.

• At two Merck plants, wages are being hoisted 4¢ to 7¢/hour for production and maintenance employees represented by United Gas, Coke & Chemical Workers (CIO). The 1500 workers at Rahway, N.J., and the 500 at Danville, Pa., also will get Washington's Birthday as an eighth paid holiday.

• An 8¢ rise is in store for 114 employees at the Kentucky Synthetic Rubber Corp. plant at Louisville, Ky., whose top wage rate now will be $2.23/hour.

• Norwich Pharmacal Co. is raising wage rates by 5¢/hour retroactive to Jan. 1 for hourly-paid employees represented by International Chemical Workers Union (AFL) at Norwich, N.Y. Also in the new contract: Good Friday as an eighth paid holiday and a four-week vacation after 20 years' service.

• In Montreal, a one-year contract renewal between Sherwin-Williams of Canada and ICWU (AFL) provides for hourly wage increases of 7-9¢ for men and 5-7¢ for women.

Year of Decision

By the end of this year, it looks like there'll be a decision in the cellophane tape lawsuit *(CW, Nov. 27, '54, p. 30)* that has been more than three years in unwinding.

Living up to all expectations, the at times stormy trial got under way the day after Thanksgiving, wrangled along through 26 days in federal district court at New York, and ended last fortnight after more than 4,000 pages of testimony had been put into the record, along with numerous documents and pictures submitted as evidence.

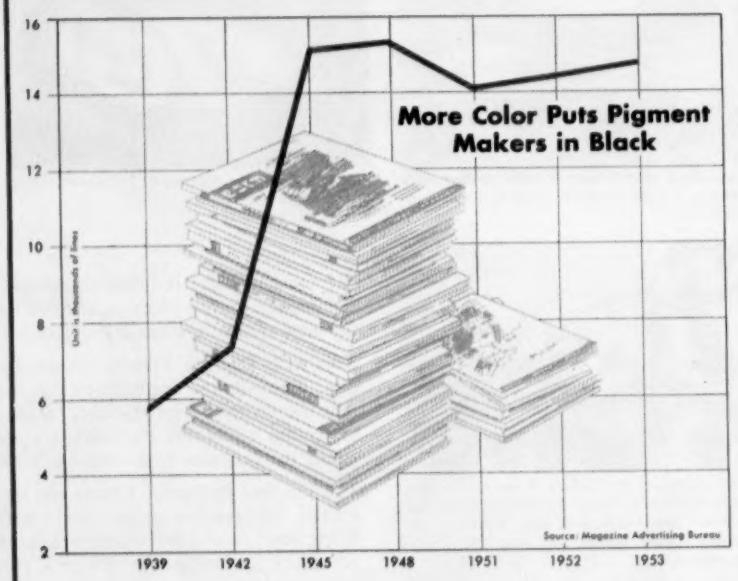
Next step will be for lawyers for Technical Tape Corp. (maker of "Tuck" brand tapes) and for Minnesota Mining & Mfg. Co. (maker of 'Scotch" brand tapes) to file written briefs with Judge Alexander Bicks by Feb. 15. After that, each will be entitled to file a reply brief by April 1; and then it'll be up to Judge Bicks to work out a decision in this complex dispute—his first patent case since he was appointed to the federal bench last year.

Double Conflict: Most of the testimony drawn from witnesses during the trial was directed at the two principal points of conflict between the two companies. These are first, the validity and scope of 3M's 1939 Drew patent on pressure sensitive adhesive transparent tape (No. 2,177,627); and second, allegedly unfair trade practices on 3M's part.

On the first point, TTC witnesses—such as that firm's research director Paul Shalita—asserted that the Drew patent was antedated by similar discoveries abroad – particularly those claimed by a German inventor Leopold Rado in French and British patents and in a German patent application on which 3M once held an option. Minnesota Mining – whose "Scotch" brand cellophane tape reached the U. S. market some 20 years before the "Tuck" product—produced technical witnesses whose testimony was to the opposite effect.

As to trade practices, TTC testimony was intended to show that 3M has been requiring its distributors to sell "Scotch" tapes on an exclusive basis, and that dealers handling rival products have been "blacklisted." In denying this charge, General Manager Charles Smith of 3M's cellophane tape division declared that 3M has more than 30,000 distributors or jobbers; that many of these dealers handle rival brands; and that the company has never required exclusive dealing.

IMPACT



A Rosy Glow to Profits

THE TREND toward use of more color advertising in consumer magazines has had a definitely salubrious impact on profits of chemical suppliers in recent years. Consumed in 1953 (by manufacturers of colored inks): an estimated $25 million in lakes and toners (e.g., hansa, benzidine yellows, toluidines, para reds, thiocyanine blues and greens); used by the entire ink industry: over $6 million in thermosetting resins, $4 million in alcohols and acetates, $8.5 million in various types of drying oils.

A BRAND NEW SOLVENT

Dimethyl Sulfoxide

with many unusual advantages

STEPAN CH_3 CH_3 >S=O STEPAN CH_3 CH_3 >S=O STEPAN

Dimethyl Sulfoxide, now available in pilot plant quantities, is a clear, water-white, very hygroscopic and completely water soluble liquid. It is believed to be non-toxic, has practically no odor, and only a slightly bitter taste. Despite being water soluble it dissolves many organic compounds and is unusually selective in its solubility characteristics for hydrocarbons. Also of particular interest are the high boiling point, high flash point, and the low freezing point, (in eutectic mixtures with water) of Dimethyl Sulfoxide. Listed below are a few of its potential uses.

Potential uses

- **Solvent for acetylene** . . . absorbs 32% more acetylene than acetone . . . 3 times longer life in acetylene cylinders.
- **Selective separation of paraffinic** and aromatic hydrocarbon mixtures. Also for desulphurization of gasolines.
- **Solvent for certain synthetic fibres** such as polyacrylonitrile and acetate rayon as well as others.
- **As anti-freeze** or hydraulic fluid when mixed with water. (Offers possible cost savings.)
- **As paint and varnish remover.** Also nail polish remover.
- **Possibly useful as diesel fuel additive.** (Raises cetane number.)

Physical Properties

	Dimethyl Sulfoxide				
Molecular weight	78				
Melting point	18.45°C (supercools easily)				
Boiling point (760 mm)	189°C				
Spec. gravity (20°C)	1.100				
Refractive index ($n21°_D$)	1.4787				
Vapor pressure	at	20°	30°	47.4°	56.6°C
	mm	.37	.79	2.82	5.11
Viscosity 27°C	1.1 cps				
Specific heat	.5 cal/g as solid .7 cal/g as liquid				
Heat of vaporization	ca 175 cal/g				
Heat of solution	60 cal/g				
Heat of fusion	20 cal/g				
Heat of combustion	6050 cal/g				
Flash point (°C)	95° (open cup)				
Coefficient of expansion	.00088				
Dielectric constant	45				

Write For Complete Information

STEPAN CHEMICAL CO.

20 North Wacker Drive, Chicago 6, Illinois

Telephone: CEntral 6-5511

Your Product is
Safe
in the SSIRCO
Steel Drum

Special hi-bake liners keep the product you process constant, free from rust or corrosion. Whether your product is due for immediate use or long storage, it will stay the same as the day you packaged it.

This safety is insured by the high grade steel and liners Southern States uses in its drums. They're built to take a pounding, almost indefinitely, without danger of seepage or leakage.

SSirco's modern drum plant is equipped to degrease, clean, and phosphatize, in addition to baking all types of liners for the chemical industry.

Available in 15 and 16 gallon black steel drums with tight heads, 30 and 55 gallon black steel drums with tight or open heads, 55 gallon galvanized steel drums with metalized interior seam.

FOR FULL DETAILS, CONTACT:
container division
SOUTHERN STATES
IRON ROOFING CO
SALES OFFICE: Savannah, Ga.
PLANT: Birmingham, Alabama

ORE SAMPLES in Korea are inspected in the new $160,000 assay laboratory.

FOREIGN. . . . . .

Recovery/Korea: Part and parcel of the UN Korean Reconstruction Agency's attempt to put the Korean economy back on a firm financial footing is exploitation of untapped mineral resources. Deposits of gold, graphite, tungsten and coal are available; there's enough lead, copper, bismuth and manganese to excite interest in foreign quarters. To assess the commercial value of mines now in existence and properly evaluate new finds, UNKRA has recently built a mineral assay lab, at a cost of $160,000. Its hope: to interest investors from abroad in the possibility of Korean ventures.

•

Exports/Great Britain: Changes in export licensing and in controls on British ports' transhipments became effective last week. All export licensing on shipments to Hong Kong will henceforth be suspended; Britain will depend upon the Hong Kong government to police trade in strategic goods to China.

•

Terylene/Great Britain: Imperial Chemical Industries expects to be producing 10,000 tons of Terylene annually by next year. Facilities at Wilton (a plant estimated to have cost $56 million) should be producing at a rate of 5000 tons/year by the end of 1955, should reach capacity in 1956. Also due to come onstream soon: a similar plant at Millhaven, near Kingston, Ont., due to produce some 4000 tons/year.

•

Industrialization/Iraq: The Iraq Development Board, in an attempt to take the first step in a program of economic industrialization, has just drafted a long-term program estimated to involve over $105 million. Included: plans to build chemical, fertilizer, and natural gas-producing units. Estimated date of completion: 1960.

•

Fertilizer/Venezuela: Negotiations have been completed between the Venezuelan government and Montecatini (Milan, Italy) whereby Montecatini will build a synthetic nitrate plant at Barranca Bermeja. Besides making its own process patents available, Montecatini will supply technical assistance until the plant is in full operation and local labor can be trained to take over production. Equipment will be supplied by selected Italian firms.

Similar negotiations were transacted recently with Colombia.

Specially treated sulphurs have become a necessity in the formulation of modern rubber products. The "sulphur flour" of the past has given way to the carefully screened and surface conditioned grades of high purity sulphur which insure rapid and smooth blending into a variety of rubber recipes.

Stauffer has offered *special* Rubbermaker's Sulphurs for over three decades, constantly improving the fineness and surface properties to meet the demands of modern rubber technology. In addition, Stauffer has pioneered the commercial production of "insoluble sulphur" to prevent blooming prior to vulcanization.

Plants, offices, and warehouses coast-to-coast assure prompt handling of your requirements.

STAUFFER CHEMICALS FOR RUBBERMAKERS

Caustic Soda • Carbon Tetrachloride • Carbon Disulphide
Sulphur Chlorides
SULPHURS—Crystex®—85% "IS" • Tire Brand—99.5% Pure
Tube Brand—Refined • Special Flowers—30% "IS".

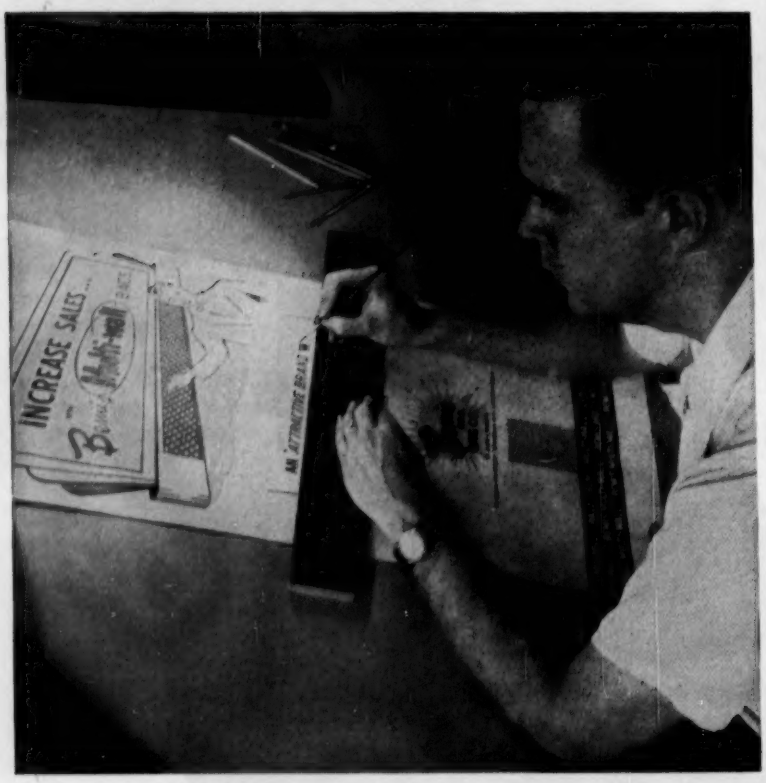
Stauffer

STAUFFER CHEMICAL COMPANY

380 MADISON AVENUE, NEW YORK 17, N. Y.

221 N. LaSalle St., Chicago 1, Ill. • 636 California St., San Francisco 8, California
326 S. Main Street, Akron 8, Ohio • 824 Wilshire Boulevard, Los Angeles 14, Calif. • 8901 Hempstead Road, Houston 8, Texas • North Portland, Ore. • Weslaco, Texas • Apopka, Fla.

How Bemis makes GOOD multiwall bags for you



Brands that SELL are designed by Bemis artists like Jack Mahnken, of the Art Department at the St. Louis plant. Before joining Bemis, Jack majored in the nationally known School of Art of Washington University, took advanced courses in commercial design at Hadley Tech, and worked in advertising display studios.

Our artists help make your brand sell!

Your brand on your multiwall bag is a salesman. It can help to make... or lose... a sale. Bemis art departments create customer brands that help sell the product...and give established brands a touch that jumps their selling power.

Also, Bemis is the only bag maker whose artists can offer you the benefits of QUANTACOLOR, the scientific method of making certain that the colors combined in any design are truly in harmony. QUANTACOLOR has proved that it helps to sell merchandise.

Bemis

BEMIS BRO BAG COMPANY

General Offices—St. Louis 2, Mo.

Sales Offices in Principal Cities

Misleading Figures

No one can dispute that Germany's chemical industry had a good year in 1954, but there's still a long way to go before it recovers its prewar position of eminence in world chemical markets. Sales rose to an estimated DM 12.4 billion (an increase of 13% over 1953 returns); exports jumped from DM 2.3 to DM 3 billion.

But pleasant as they may seem at first glance, these figures nonetheless point out that German chemical makers have only reached the halfway mark compared with 1938 standards. Today the German chemical industry's cut of total world output is 12%; before the war it was 24%.

On another basis: compared with 1938 tonnage figures, Germany's chemical production has only increased 70-75%; some major producing nations have more than tripled their production rate.

Moreover, spokesmen for the German chemical industry say they doubt that another 10% increase can be racked up this year. Hopes for a sweeping tax reform (that would permit greater capital investment) have thus far been unrealized. Nor does the industry harbor great hopes for a cartel law ("in the near future") that would better its competitive position in world markets.

KEY CHANGES. . .

Douglas S. Calder, to vice-president, general manager and director, Mallinckrodt Chemical Works, Ltd., Montreal.

Stanley W. Ensminger, to European production manager, Chas. Pfizer & Co., Inc., Brooklyn.

Frank G. Breyer, and **S. W. Andrews,** to directors, Fluor Corp., Ltd., Los Angeles.

Thomas H. Mitchell and **Ralph W. Olmstead,** to vice-presidents, The H. K. Ferguson Co., Cleveland.

H. C. Little, to assistant general manager, Agricultural Chemicals Division, American Cyanamid Co., New York.

H. W. Seyler, to assistant vice-president, Coal Chemical Operations, United States Steel Corp., Pittsburgh.

Murray Owen, to director of employee relations, American Cyanamid Co., New York.

Which car of Caustic Soda saves you the most money?

Both of these cars look alike, and their capacities are the same. Both are filled. Yet the one on top may save you $131 per car. Can you guess why?

The answer is simply that the car on top contains 73% caustic soda, while the other contains 50%.

More and more companies are specifying the higher concentration in order to save money. These savings are possible because:

1. A car of 73% contains more caustic by volume.
2. A car of 73% can be unloaded as fast as a lower concentration, thereby saving man-hours.

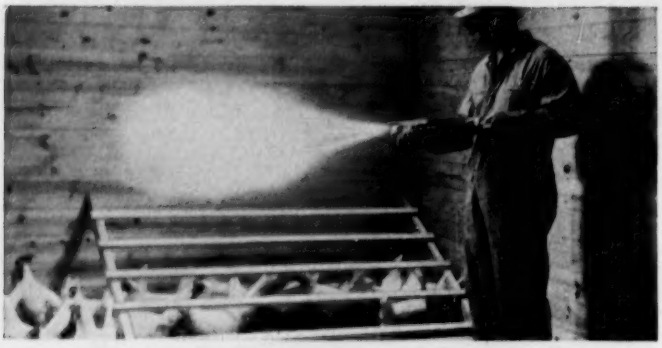
One Columbia-Southern customer who converted from 50% to 73% figured the savings to his company at $131 per car. Other customers who made the changeover show total annual savings ranging from $1179 to $35,100.

The amount of caustic soda you use and your location will determine how much you may save. But the point is: If you use caustic soda, you owe it to yourself to check the possible economies. Our staff will be glad to do the figuring for you—no obligation, of course. Just contact the Caustic Soda Department at our Pittsburgh office.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY
ONE GATEWAY CENTER · PITTSBURGH 22 · PENNSYLVANIA

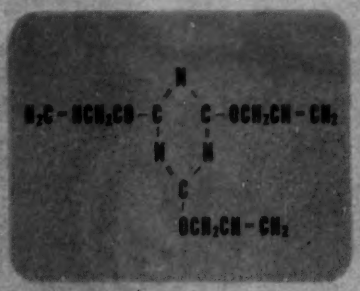
District Offices: Cincinnati • Charlotte
Chicago • Cleveland • Boston • New York
St. Louis • Minneapolis • New Orleans
Dallas • Houston • Pittsburgh • Philadelphia
San Francisco

Life... on the Chemical Newsfront



POULTRY NOW CAN BE MASS-VACCINATED against Newcastle Disease by spraying new BIOLATOR® Newcastle Vaccine Dust *Lederle* into the house. One man now can vaccinate 10,000 birds an hour. Birds gain immunity by inhaling the new dust vaccine—a preparation of the live virus type. (No. 1)

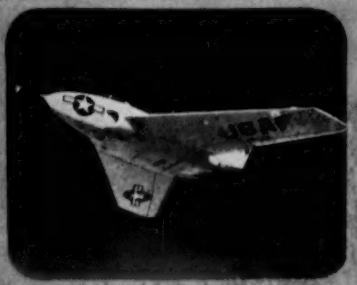
PROJECT #1000. On a third repeat order from the same client in Brazil, Chemical Construction Corp., a Cyanamid subsidiary, was awarded its 1000th job in its 40th year. Among the many projects completed during 1954, Chemico placed "on stream" 1000 tons daily capacity for anhydrous ammonia. (No. 2)



Triallyl cyanurate lends unique heat resistance to plastics for:

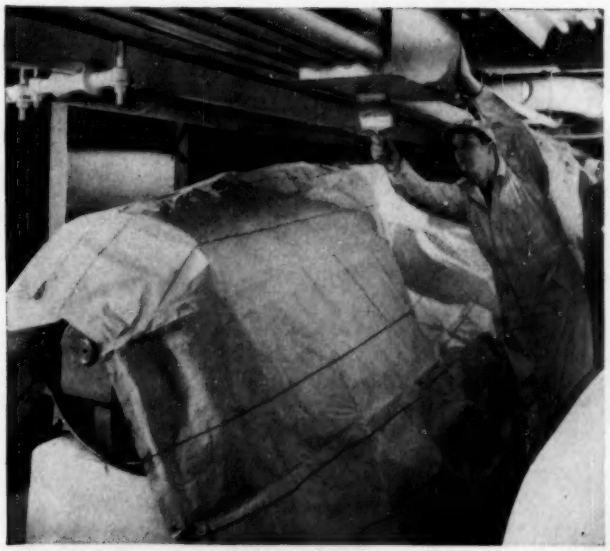
Heat-stable, pit-resistant casting resins for safety glasses or windows; and for...

Heat-stable wire coating compositions with excellent electrical properties; and...



Special aircraft applications where a copolymer of triallyl cyanurate and a maleic alkyd make glass cloth laminates with flexural strengths of 30,000 psi even after 24 hours exposure to 500°F.

Triallyl cyanurate, with its stable triazine ring and reactive allyloxy group on each carbon, is used in copolymers to produce such heat-resistant plastics. Recent price reduction gives this chemical added attraction for new product development. (No. 3)



PAPER DROP CLOTHS for painters, made by Fibleco Illinois Corporation, are among many new market-expanding paper products made possible by Cyanamid's MELOSTRENGTH® Resin. The MELOSTRENGTH* Paper is made by Mosinee Paper Mills with MELOSTRENGTH Resin, which binds paper fibers strongly together so paper stays strong even when soaking wet. Because the paper is stronger dry, too, drop cloths stand up through hard scuffing, abrasion and other abuse. Such properties open many new uses for paper. (No. 4)

FOUNDATION FOR THE NEW TRIM LOOK is often a foundation garment woven of rubber thread. When the rubber is compounded with Cyanamid's new ANTIOXIDANT 425*, these garments stay white, with minimum discoloration due to aging of the rubber. ANTIOXIDANT 425, now in full commercial production, gives rubber highest resistance to discoloration yet attainable. (No. 5)

"Cogitations"

AEROCAT TRIPLE A*, High Alumina Catalyst has proved its value in fluid cracking for the petroleum industry. It maintains 15-25% higher equilibrium activity than regular 13% alumina catalyst and permits greater freedom of operation, excellent selectivity, and lower stack losses. (No. 6)

Increasing speeds in papermaking processes tend to accentuate two-sidedness in the finished paper. Differences in color, structure and surface characteristics on the two sides are the most usual effects of two-sidedness. The possibility of two-sidedness always exists because paper is made from a dilute pulp poured on a wire screen followed by drainage of water through the wire. The fines in fibers, fillers and additives tend to be washed out of the bottom or wire side of the paper more than from the top or the felt side. A laboratory method has been developed to produce two-sidedness accurately in sample papers. The method has been used to develop color formulations which give minimum two-sidedness on mill-run sheet. Complete details are available in Technical Bulletin No. 827 of Cyanamid's Organic Chemicals Division. (No. 7)

Wood waste can be converted to hardboard at low temperature cure and short cure cycle with new aminoplastic resins PDL-1-1969 and PDL-1-1970, which give high strength and do not discolor. Hardboard is suitable for structural or furniture applications. (No. 8)

Architectural white enamels made with CYCOPOL® 340-18 copolymer resin stay white longer and retain high gloss even under high humidity conditions. This new CYCOPOL resin has infinite solubility in aliphatic hydrocarbons and promotes excellent flow in enamels. (No. 9)

Relieve edema with DIAMOX® acetazoleamide *Lederle*, the new oral diuretic and acid-base regulator, which inhibits the enzyme carbonic anhydrase, and reduces acidification of the urine. Oral administration of DIAMOX is easier than injection of mercurial diuretics. DIAMOX, a prescription drug, is particularly effective in congestive heart disease. (No. 10)

More information on any of the products mentioned in these pages is available on request. Write to "Chemical Newsfront," American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y., or use the coupon below—simply checking the items on which you wish additional information.

*Trade-mark

AMERICAN *Cyanamid* COMPANY
30 ROCKEFELLER PLAZA
NEW YORK 20, NEW YORK

SEND more information on the following items mentioned in the February, 1955 issue of LIFE on the Chemical Newsfront:

C.W

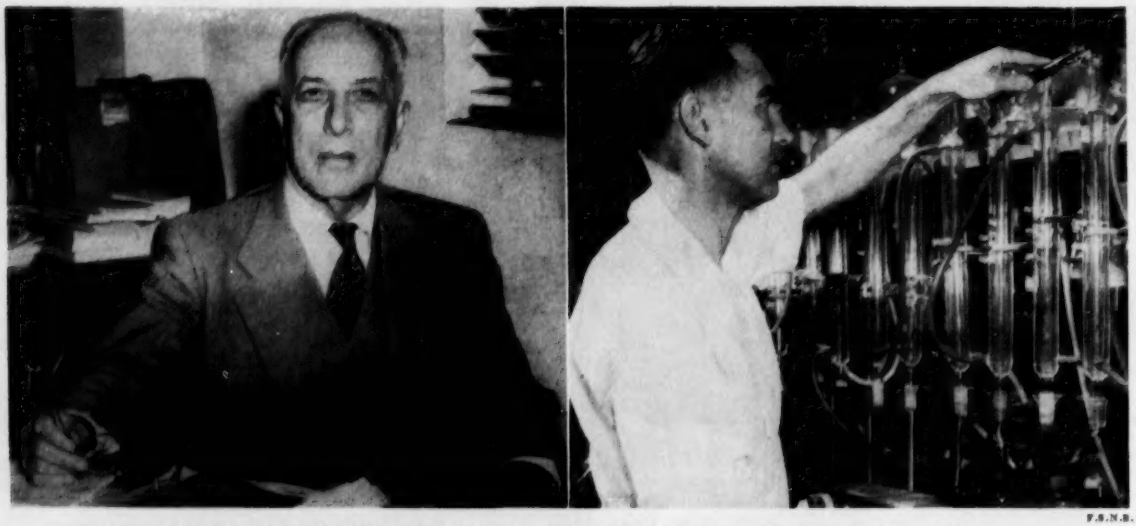
No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
Literature ☐ Prices ☐ Sample ☐ of_____

Name_____

Company_____

Address_____

City_____ Zone_____ State_____



F.S.N.S.

TAYLOR AND WINTERLE: Making sure 5800 pesticide products live up to their labels.

Pesticide Regulation, State's-Eye View

There's a tendency among makers of household pesticidal specialties to regard any and all laws dealing with their products as insufferable nuisances – costly, troublesome, petty. Since the federal regulations have become pretty well assimilated (the Federal Insecticide, Fungicide, and Rodenticide Law of 1947 is the most applicable; the Miller amendment is of greater concern to makers of farm chemicals), the principal current complaints are about state laws.

Right now, with 42 of the state legislatures starting their '55 sessions, there is considerable worry extant re possible changes in regulations. But in many cases, the state laws have been carefully thought out and prepared, and are stabilized in detail and interpretation—and it is difficult for many officials who have worked on such laws and their enforcement to understand the lack of cooperation they receive.

Look at the Law: *CW* has recently examined the case history of one of the newer statutes, Florida's, to see how it has been greeted by industry. This law has been in force for about a year and a half and has even been termed by some a "model" regulation. Patterned after the best of other state laws, it is the result of nearly two years' work by Florida's agriculture department, in cooperation with industry, and industry groups.

It involves payment of a moderate fee—$10 per product per year for a company's first 10 items, $2.50 for each additional. (The Florida Insecticide Law, in effect since the '30s and concerned largely with farm chemicals, carries a $125 initial registration fee. After some debate, it was decided to make the law for household products separate, rather than an amendment to this law.)

F.S.N.S.

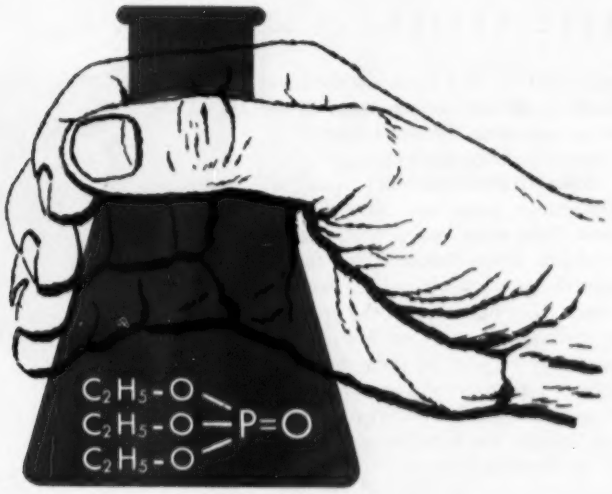
COMMISSIONER MAYO: Backing the lawmakers with a squad of inspectors.

Stipulations are relatively simple: All household pesticidal products offered for sale must be registered. The label must have the name and address of the manufacturer or the registrant (which need not be the maker), as well as brand name and content weight. Highly toxic materials must be packed in nonleaking containers, bear skull and cross bones, the word poison, and a suggested antidote.

Pesticides like the arsenates, fluorides and fluosilicates must be distinctly colored to warn the user (the department may make exceptions).

Claim Check: The agriculture department can demand evidence to support label claims, and can refuse registration for products it feels can't live up to the label. State Chemist J. J. Taylor, and Russ Winterle, director of the pesticide laboratory, check the label claims. With directors of the Florida agricultural experiment station and the Florida agricultural extension service, they pass on claims, and recommend technical rules and regulations under which the law is enforced.

So far, some 625 companies have registered 5814 products. But almost an equal number of firms have failed to register all their products on Florida



Eastman

triethyl phosphate

may be the answer to your search for:

- a non-corrosive solvent with low toxicity
- a fine lubricant additive
- a mild ethylating agent
- a starting material for insecticide manufacture
- a useful catalyst for:
  - the dehydration of glycols
  - the synthesis of esters
  - the polymerization of certain monomers

CHARACTERISTICS

Color, APHA	10 max.
Specific Gravity, 20°/20°C	1.067-1.072
Acidity, as H_3PO_4	0.03% max.
Boiling Range	97% between 209°-218°C
Flash Point	240°F
Weight Per Gallon, 20°C	8.90 lbs.

Eastman triethyl phosphate is soluble in water and most organic solvents. It is very resistant to hydrolysis at ordinary temperatures.

It is quite useful as an ethylating agent, for all three of its ethyl groups are available.

Triethyl phosphate reacts with phosphorus pentoxide or oxy trichloride to yield poly esters which have unusual properties as insecticides. These complex esters also show some promise as rodenticides.

We'll be glad to send you detailed information and sample quantities of Eastman triethyl phosphate for your evaluation. Write to Eastman Chemical Products, Inc., Chemicals Division, Kingsport, Tennessee.

Eastman
CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE
A subsidiary of EASTMAN KODAK COMPANY

SALES OFFICES: **Eastman Chemical Products, Inc.**, Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cincinnati—Carew Tower; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; St. Louis—Continental Bldg.; Houston—412 Main St. **West Coast: Wilson Meyer Co.**, San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Salt Lake City—73 S. Main St.; Seattle—821 Second Ave.

store shelves. And these are the cases baffling officials, because many of the firms are among the best-known in the chemical specialties field.

Sales Crackdown: As a result, ag department inspectors have had to issue "stop-sales" on a hefty list of products. Stores found selling unregistered products have a five-way choice: they may register the products in their own name (but few do), or they may dispose of them by using them on their own premises, giving them to charitable institutions, returning them to the distributor or maker, or by destroying them.

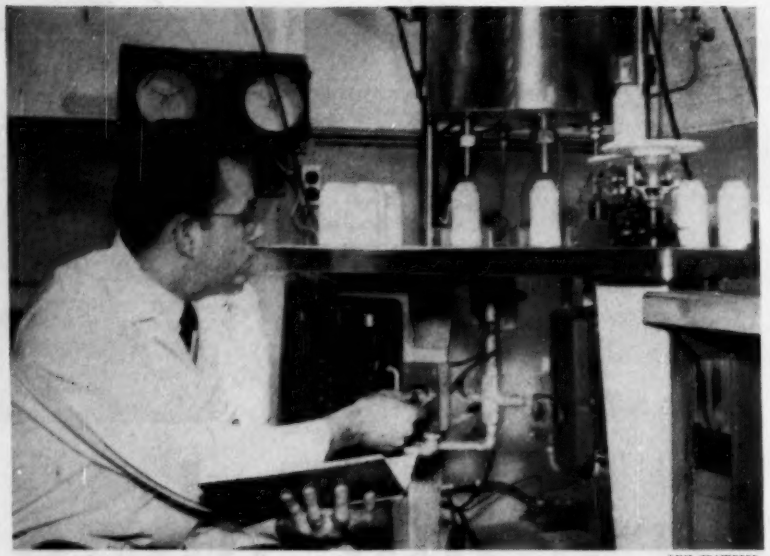
Spotting the unregistered products, and enforcing disposal has imposed a considerable burden on authorities. Headed by Nathan Mayo, agriculture department commissioner, and his son, Nat Mayo, the supervising inspector, some 23 inspectors check on retailers. They are assisted by 29 other inspectors who have been engaged in retail food store inspection, and three drug inspectors.

"Our most serious problem in the first year was getting manufacturers to register," says Nat Mayo. "Now the problem is ridding the shelves of unregistered products."

Elbow Room: The extra work created by the new law has forced the ag department to expand—an addition is being built onto the agricultural building in Tallahassee for the inspection section; (that section's presently used space will be made into labs).

There's no simple explanation, though, as to why many manufacturers have failed to register. Some of the products have been on dealer's shelves for 15 years or more. (Some of the manufacturers have gone out of business.) Of those that still make specialties, some have discontinued some lines, and feel others aren't worth exploiting in Florida. But in many cases, Florida officials complain, well-known firms don't even answer letters about unregistered items.

Other firms, tempted to an area like Florida where bug killers are used in nearly every household, haven't provided products that can do an effective job. It was obvious that some sort of policing will be forced by citizens, eventually—and it's the feeling of Florida officials that its present regulation can benefit both the state's householders and the legitimate manufacturers.



LYN CRAWFORD

TEST LOADING: Limited fillings of new formulas are checked for shelf life.

Aerosols Get an Assist

Aerosol toothpastes, aerosol donut mixes—those are some of the things Propel Chemicals (New York) is talking about these days.

A specialties firm, it's found a niche for itself in the aerosol field to the tune of $250,000/year. Basic policy: originating formulations and selling them in quantity to aerosol marketers and fillers.

To date, it has developed some dozen ready-to-fill concentrates, most of which are now in use. They range from a burn remedy to a clear plastic spray.

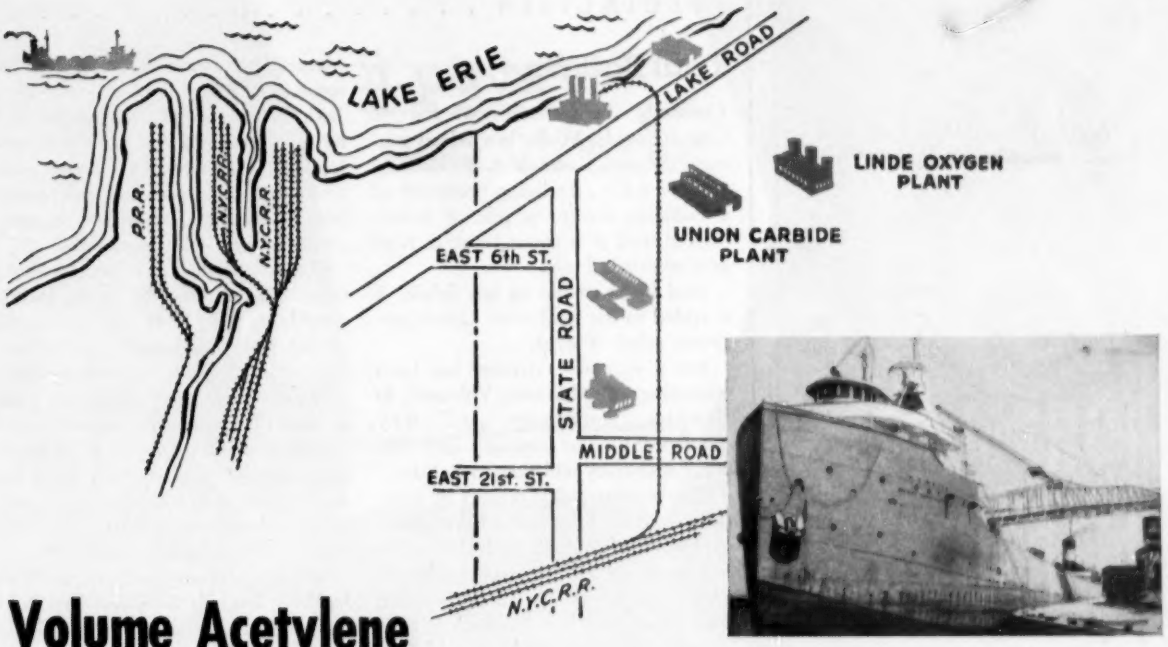
Forerunner? Whether the company is a forerunner of a trend toward devise-and-sell-formulations firms remains to be seen. Any company venturning into this arena faces competition from several quarters. Du Pont and General Chemical, with an eye toward selling more propellants, offer free technical service in working out formulas. But, naturally, there are limitations on what any supplier can afford to do for any and all customers.

There are special consultants in the aerosol field, too, who will work out formulas to customers' wishes. They can offer exclusive formulas (which Propel does not), and charge an appropriate fee. Propel Chemicals figures to make its main profit on selling ready-to-load formulations.

Some aerosol fillers, too, give some aid on formula creation, but few, as yet, have gone into the field deeply.

Coming Up: Fast on its feet, formulationwise, and able to meet the competition it has encountered so far, Propel has made out well in the last three years. In the next year or so, Jerry Froot, sales manager, bets these items will catch on:

- Antiperspirants. A concentrate, which is not based on aluminum salts and which would not corrode metal containers.
- Hair shampoos, which skirt the corrosion problem.
- Furniture polishes. A silicone-based concentrate scheduled to be on the market in about two months.
- Toothpastes. This constitutes a "fabulous" market, according to Propel. Others, however, say such aerosols would only be a gimmick and would be too expensive.
- Adhesives. For the home handyman, a self-dispensing adhesive. Big glue maker envisions this package form competing with polyethylene bottles and tubes.
- Food products. Shortly after the recent appearance of an aerosol pancake mix (*CW Newsletter, Jan. 1*), Propel started work on a donut mix, at the behest of a food company. The donut question isn't answered yet; it's just one of the problems intriguing aerosol enthusiasts.



Volume Acetylene Now Available at ASHTABULA

If you plan to use acetylene as a raw material in your proposed new plant, consider these advantages of the Ashtabula, Ohio, area:

1. Acetylene by Pipe Line. Acetylene gas can be generated at the UNION CARBIDE plant in Ashtabula and piped directly to you. In fact, acetylene now can be piped safely and economically for many miles.

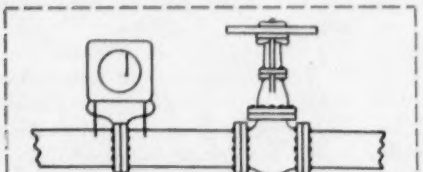
2. Plant Sites Available. Choice locations for your new plant are available in or near Ashtabula, and well within piping distance of volume acetylene.

3. Ashtabula—A New Chemical Center. Chemicals now produced in the Ashtabula area, in addition to acetylene and calcium carbide, include sodium, chlorine, oxygen, HCl, lime slurry, polyvinyl chloride, and trichlorethylene. Nitrogen is also available in large volumes.

4. Transportation—Rail or Water. Ashtabula is served by the New York Central, the Pennsylvania, and the Nickel Plate Railroads. With its location on Lake Erie, your products can be shipped by barge to all parts of the United States reached by inland waterways. Completion of the St. Lawrence Seaway will offer further advantages for bulk shipments.

UNION CARBIDE is also produced at Niagara Falls, New York; Sault Ste. Marie, Michigan; and Portland, Oregon, in addition to Ashtabula. Bulk shipments to chemical users can be made from any of these plants, including Ashtabula. Drum stocks for industrial users are maintained at 111 warehouses throughout the United States.

Whatever your plans or requirements, you are invited to telephone or write to LINDE'S CARBIDE-ACETYLENE DEPARTMENT for complete technical information and counsel.



LINDE AIR PRODUCTS COMPANY

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street UCC New York 17, N. Y.

Offices in Other Principal Cities

"Linde" and "Union" are registered trade-marks of Union Carbide and Carbon Corporation.

CHEMICALS FOR INDUSTRY

Uniform quality . . . The key to the superior Chemicals for industry produced by the Tennessee Corporation. As basic producers, we maintain exacting quality control from the raw materials to the finished product that bears our label.

COPPER SULPHATE
MONOHYDRATED COPPER SULPHATE
COPPER CARBONATE
COPPER HYDRATE
CUPRIC CHLORIDE
CUPRIC OXIDE
MANGANESE SULPHATE
MONOHYDRATED MANGANESE SULPHATE
MANGANOUS OXIDE
MANGANESE CARBONATE
FERRIC SULPHATE
SULPHUR DIOXIDE
MONOHYDRATED ZINC SULPHATE
CHLOROSULPHONIC ACID
ORGANIC SULPHONIC ACIDS (& DERIVATIVES)

Samples, Specifications and Detailed Information Available Upon Request.

TENNESSEE TC CORPORATION

617-29 Grant Building, Atlanta, Georgia

Trial Balloon

Currently being test-marketed in Grand Rapids, Mich., is a fabric softener dubbed Balloon. A product of Armour & Co., it's being promoted as a fluffiness creator—a pile of towels treated with it is about twice as high as a nontreated pile.

Said to be usable on any fabric, it is added to the final rinse. Color: seagreen; price: 49¢/qt.

For a year now, Armour has been marketing a similar item, Velvasoft, to laundries, launderettes and dry cleaners. Still the company isn't certain housewives will take to Balloon.

The reason: today makers of automatic washers have trained the housewife to add detergent, push the button and leave—to let the machine do the job. What Armour is wondering: can a fabric softener lure her back in time to catch the rinse cycle to add Balloon at the proper moment? That's what the test-marketing should help decide.

Bar in a Bag

Bar detergents are not a complete novelty any more, with such products as Colgate's Vel Beauty Bar and Procter & Gamble's Zest having been on the market for several years. But there is far-from-complete satisfaction with currently available products, and room for new ideas. One novel approach to syndet bar manufacture: the recently introduced product of Kangaroo Products, Inc. (Allendale, N.J.) —Lanolin-Foam.

Lanolin-Foam's make-up: a small bar of solid synthetic detergent is slipped into an envelope of cosmetic-grade (fine pore) cellulose sponge; moistening and squeezing the packet gives a supply of syndet suds.

In its synthetic toilet cake, Kangaroo's Charles Dupuy claims, it has a bar that costs roughly the same as a soap bar (on a cost per use basis), and won't soften or turn mushy even when wet for several days. (That has been one of the major problems in syndet bar manufacture—turning out one that won't soften or crumble after it has been used.)

Wax and Sudser: Dupuy gets around that difficulty by combining his synthetic detergent (he's currently using Atlantic Refining Co.'s Ultrawet K) with a combination of waxes (largely petroleum derived). He's put more than 40% wax in his cake, along with a bacteriostat and lanolin. Admittedly, the resulting bar is low-sudsing (the most frequently encountered limitation of syndet-and-wax bars), but in the sponge holder, it gives plenty of lather, Dupuy says.

Besides producing a noncrumbling cake, efficient manufacturing techniques have been hard to work out for syndet bars. Standard soap bar machinery is difficult to adapt to synthetic detergents. Dupuy, however, gets around that, too. His wax-detergent combination isn't formed on standard equipment—it is a molded bar. His most closely guarded production step: getting complete release from the mold of the solidified cake.

So far, distribution of Lanolin-Foam has been limited. Sold now largely by mail, Kangaroo makes no secret that it is seeking more generalized outlets. Currently, Kangaroo offers a kit of sponge and eight cakes (each about 1½ x ⅝ x ⅝ in.) for a dollar, sells 20 refill cakes for 70¢.

A patent-applied-for product, Lanolin-Foam might have some features other syndet bar makers could employ.

•

Foam Tags: With isocyanate foam products now supplementing its line of rubber and vinyl foam materials, General Tire and Rubber Co. (Akron) has devised new tradenames for the products: General's latex foam for mattresses is called Fashon-Foam. The isocyanate-base plastic foam is called Fashon-Foam I.S. The polyvinyl chloride foam is Fashon-Foam P. V.

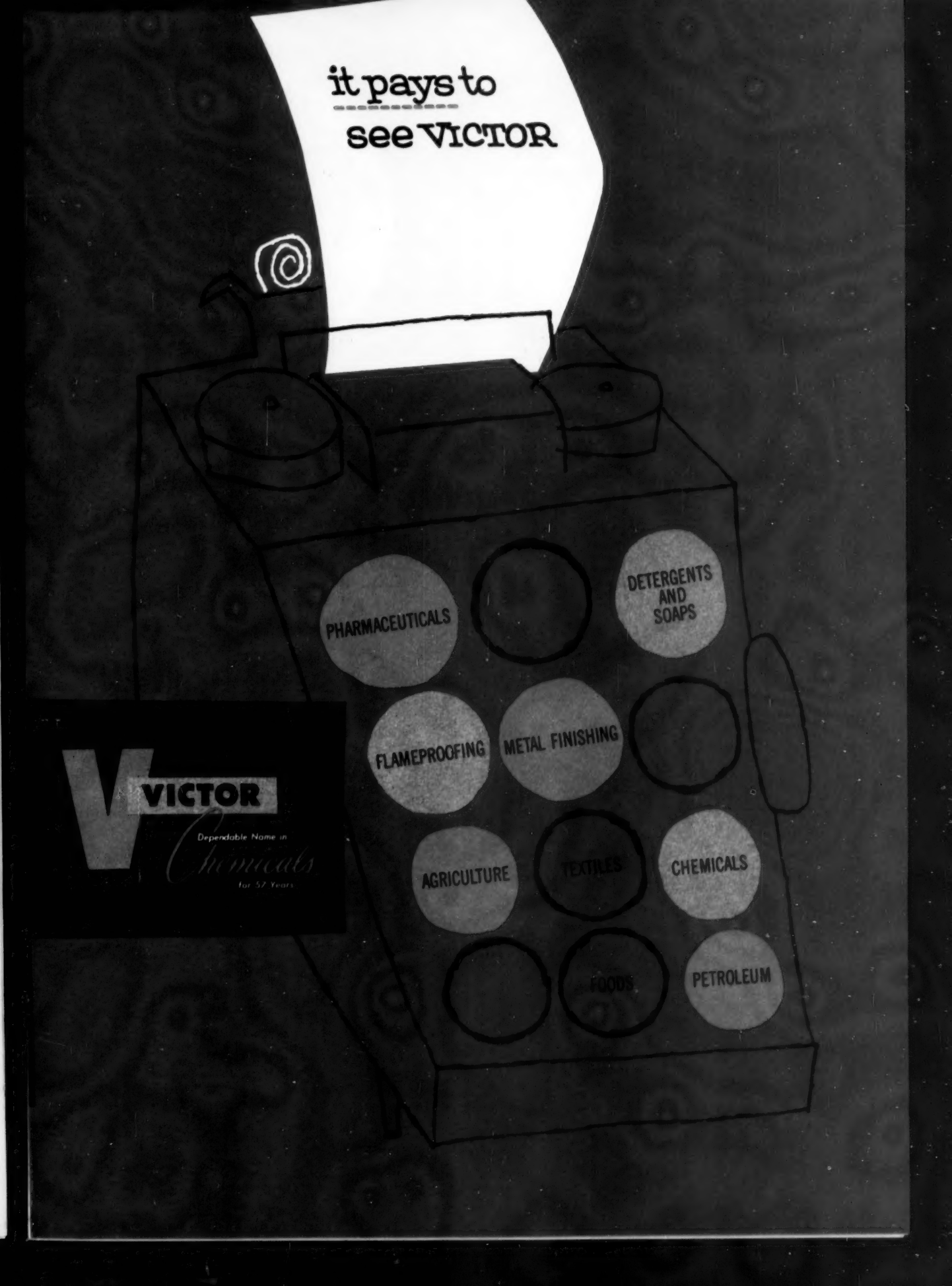
•

Nursery Enamel: A new aerosol enamel that contains no lead pigment or lead drier is being sold by Sheffield Bronze Paint Corp. (Cleveland) for use on nursery furniture and toys. Name: Kiddie Spray Non-Toxic Nursery Enamels. Available in four colors, a 12-oz. container sells for $1.89.

•

Medicine Pair: Lederle is marketing a couple of new pharmaceutical products:

- Achromycin Ophthalmic Sterilized, a combination of tetracycline, sodium borate, and sodium chloride. It is suggested for ocular infections, is sold in a dropper-equipped vial.
- Aureomycin Soluble Oblets Veterinary, an all-purpose form of


it pays to
see VICTOR
PHARMACEUTICALS
DETERGENTS AND SOAPS
FLAMEPROOFING
METAL FINISHING
AGRICULTURE
TEXTILES
CHEMICALS
FOODS
PETROLEUM
VICTOR
Dependable Name in
Chemicals
for 57 Years

SOFT TOUCH

Modern packaged water softeners do an outstanding job of giving water that velvety soft touch. Most nationally advertised packaged water softeners contain Victor trisodium phosphate . . . and cost just pennies to use. They soften water in a jiffy . . . which leaves the soap free to do a better cleaning job. The makers of packaged water softeners are another section of American industry that has found . . . *it pays* to see Victor.

TRISODIUM PHOSPHATE—Typical Uses: Cleaning compounds, water softeners, processing cheese, boiler water treatment, and denture cleaners.

HOW TO PREVENT A HOLE IN ONE

There's no ache like a toothache. But thanks to dental research, the incidence of tooth decay is dropping sharply. One of the reasons is that dentifrice makers produce ammoniated toothpastes and powders with Victor diammonium phosphate. These dentifrices combat many of the causes of tooth decay as well as doing an outstanding job of cleaning and polishing teeth. Dentrifrice makers agree . . . *it pays* to see Victor.

AMMONIUM PHOSPHATES—Typical Uses: Ammoniated dentrifrices, catalyst for resins, chrome dyeing of wool, one-bath dyeing of Dacron-wool blends, flameproofing, plant nutrient solutions. Manufacture of yeast, vinegar, bread improvers, and alcohol. Acid cleaner for metal.

TCP SPARKS THE STAFF OF LIFE

Competition is tough in the baking business. New ideas that increase sales are a *must*. Calcium enrichment of bread is just such an idea. Less than one-tenth of one per cent of Victor tricalcium phosphate, NF adds calcium enrichment. And, TCP provides bakers with an important new selling feature . . . at practically no increase in cost. Here's another industry that finds . . . *it pays* to see Victor.

TRICALCIUM PHOSPHATE—Typical Uses: Adsorbent, mineral fortification of foods, conditioner for salt, soda, sugar, and sulphur. Mineral supplement and antiacid for pharmaceuticals. Polishing agent for dentifrices.

SURE WAY TO DYE

When it comes to acidifying and exhausting dye baths, textile dyers know they are safe and sure when they use Victor formic acid. With Victor formic acid, there is less danger of damaging delicate fabrics, and at the same time it produces colors that are level and fast. Victor formic acid is completely volatile, and thus leaves no residual acid in the dye-bath. Here's another industry that agrees . . . *it pays* to see Victor.

FORMIC ACID—Typical Uses: Tanning. Acidifying dyebaths. Plating baths. Manufacturing formates, fumigants, insecticides, pharmaceuticals, refrigerants, solvents for lacquers and nylon plastics. Wire stripping compounds.

ROYAL FLUSH

Automobiles are hot stuff . . . especially when they overheat because the radiator is clogged with rust and scale. Victor oxalic acid puts the "royal flush" in most automobile radiator cleaners. The makers of these products know that nothing equals the ability of oxalic acid to clean and remove rust. They know, too, that nothing equals Victor quality. One more reason why industry agrees . . . *it pays* to see Victor.

OXALIC ACID—Typical Uses: Radiator cleaning compounds, leather processing, bleaching, laundry sour, removing rust stains from marble. Manufacture of metal polishes, blue-prints, and blueing.

PAUL BUNYAN STUMPED

Paul Bunyan was a big man . . . big enough to fell a forest with one sweep. But, Paul wasn't strong enough to wring all the pitch out of pulp. All pulp contains tar or pitch that must be removed to make high-grade paper. Victor sodium tripolyphosphate and tetrasodium pyrophosphate are among the most effective agents known for pitch removal . . . effective, yet easy to control. Another case where . . . *it pays* to see Victor.

SODIUM TRIPOLYPHOSPHATE—Typical Uses: Soap builder, manufacture of detergents and water softeners, purification of china clay, deflocculant in raw cement slurries, conditioning of oil drilling muds, anti-pitch agent.

Any Questions?

- ☐ WATER SOFTENERS?
- ☐ RADIATOR CLEANING COMPOUNDS?
- ☐ AMMONIATED DENTRIFRICES?
- ☐ CALCIUM ENRICHMENT OF BREAD?
- ☐ PITCH CONTROL?
- ☐ ACIDIFYING DYE-BATHS?

OTHER INFORMATION OR SAMPLE?_____

NAME TITLE

COMPANY

ADDRESS

CITY ZONE STATE

If PETROLEUM PRODUCTS are your special interest be sure to see the next page

VICTOR

Dependable Name in *Chemicals* for 67 Years

plants and offices of VICTOR CHEMICAL WORKS

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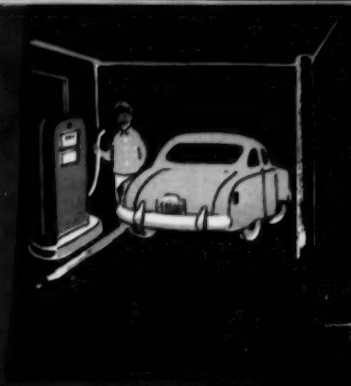
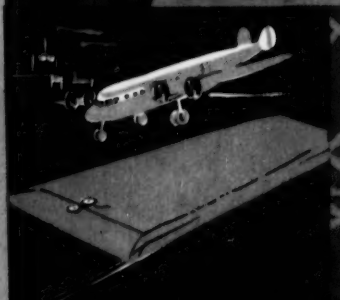
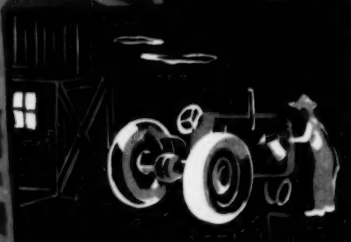
VICTOR CHEMICAL WORKS

155 North Wacker Drive, Chicago 6, Illinois



PHOSPHORUS PENTASULFIDE
FOR OIL ADDITIVES





OIL'S WELL THAT ENDS SWELL

or, how Victor Chemicals take a ride

It's a fabulous road from raw crude to super-powered gasoline and Victor phosphates ride all the way. They're used to condition the special "muds" that help make deep-well drilling possible. Victor phosphoric acid is used in refining oil and gasoline . . . Victor distilled phosphorus pentasulfide is specified as an intermediate for oil additives . . . and Victor phosphorus oxychloride is an important intermediate for new gasoline additives. In fact, Victor chemicals are used in almost every phase of the petroleum industry . . . one of more than 40 industries that finds . . . *it pays* to see Victor.

VICTOR CHEMICAL WORKS

155 North Wacker Drive, Chicago 6, Illinois

Aureomycin chlortetracycline for farm animals.

•

Ozoneproof: By adding its synthetic aromatic hydrocarbon resin Kenflex A to butyl rubber, Kenrich Corp. (Maspeth, N. Y.) says, the rubber's resistance to ozone is boosted. The Kenflex A is also claimed to increase resistance to heat aging. Full details on adding the resin is available from Kenrich Corp.

•

For Fishers: For fishermen who don't like lures to sink, DriFly spray may be the answer. The product keeps the lure floating by giving it a water-resistant coating. Made by Hank Roberts, Inc. (Boulder, Colo.), the item comes in a 2-oz. aerosol that sells for $1.98.

•

Spud Saver: A process to keep stored potatoes from shrinking has been worked out by Clinton Foods Inc.'s (New York) Herman Keller. In the treatment (U.S. Pat. 2,698,246), the potatoes are exposed to an atmosphere of ethylene dichloride (two parts) and trichloroethane (one part).

•

Mildewproof: Treating shoe linings with a combination of copper-8-quinolinolate and phenyl mercuric triethanol ammonium lactate has been suggested by Arthur Weick (Bronxville, N. Y.) as a way to stop mildewing (U.S. Pat. 2,698,263). The lactate can be added after the copper-8 has been applied in oil and then rinsed out.

•

Nontinting Detergent: Colgate's Herbert Smith, has patented (U.S. Pat. 2,698,302) a detergent composition—an unsymmetrical mononuclear aryl thiourea to prevent tarnishing or discoloration of copper-based alloys.

•

Thread Lube: Silicones play a different sort of role in the patent (U.S. Pat. 2,698,817) granted to Harry Guenther of Coats & Clark, Inc., well-known thread makers. Guenther coats polyacrylonitrile threads with a silicone to prevent fusion breaks during high-speed machine sewing.

•

Better Mileage: An automotive specialty worked out by John McGrogan of the Atlantic Refining Co. is a lubricant for protection and preservation of auto tires and tubes (U.S. Pat. 2,698,834). It is essentially sodium sulfonate (0.25-5%); aluminum stearate (2-14.75%); and aromatic-free lube oil (85-97.75%).

•

Bulletins: Some of the latest:

- Advance Solvents & Chemical Corp. (New York)—a data sheet on Plastoflex SP-2, a plasticizer used in the manufacture of open-cell, chemically blown vinyl sponge.
- Atlas Powder Co. (Wilmington)—a pamphlet detailing a method of calculation of HLB (hydrophile-lipophile balance) numbers of nonionic surface-active agents.
- B. F. Goodrich, Industrial Products Division (Akron, O.)—data sheet on plastisols of liquid vinyl plastics.

•

Shined by Silicones: Recently patented (U.S. Pat. 2,698,805) by Chester Currie and Charles Todd (Dow Corning) is a formulation for silicone-containing polishes. Ingredients: silicone (2-15%); hydrocarbon solvent (10-45%); an aluminum stearate (0.5-3%); water (37-87%), and either aluminum borate or sulfate (2% or less).

•

Color Carrier: To speed and simplify coloring of polyethylene film and extrusions, Allied Chemical & Dye Corp.'s Semet-Solvay Division is promoting low-molecular-weight polyethylene as a color carrier.

•

Tinted Cement: Another use of color is in construction cement—and United Dye & Chemical Corp. (New York) is now offering Amdyco, a cement in seven colors. Merchandised nationally through United's American Dyewood Co. (Belleville, N. J.), the cement is for the home handyman, and can be used indoors or out, throughout the year. Special forms permit the user to make his own concrete tiles, in a number of shapes.

•

Catalyst Supply: Advance Solvents &

Tough Tubes for Tots

PAINTS in polyethylene, that's the newest thing in the kindergarten. The finger paint set (*above*) includes four colors, is made by Parker Bros. Inc. (Salem, Mass.). The translucent tubes are claimed to be so tough they won't burst even if stepped on. Too, because the tube recovers its original shape, excess paint is snuffed back into the tube, eliminating messy necks. The tube—tradenamed Bracon—is a product of Bradley Container Corp. (Maynard, Mass.).

INDOPOL POLYBUTENES

Uses

As a component of
- sealing compounds
- insulation and sound deadening mastics
- calking compounds
- cements
- pressure sensitive adhesives

In the preparation of tracing paper

As a dielectric for condensers

As a lubricant in
- aluminum drawing and rolling
- special high temperature services

Advantages

- High viscosity
- Compatible with vegetable oils, aliphatic and aromatic solvents and a wide variety of resins, waxes and pitches
- Minimum thermal decomposition residue
- Non-drying
- Color stable
- Non-migrating
- Low cost

Properties

INDOPOL POLYBUTENES

GRADE	L-10	L-50	L-100	H-35	H-50	H-100	H-300
Average Molecular wt.	330	420	470	660	700	780	940
Viscosity							
Saybolt seconds at 100°F	114	516	1040	7900	14000	44000	140000
at 210°F	40.6	66.5	93.8	375	540	1010	3000
Poises at 77°F	0.36	2.0	4.8	38	75	200	800
Gardner-Holdt at 77°F.	A-1	H	R	Z-2	Z-4	Z-6	Z-9
Viscosity Index	100	105	102	—	—	—	—
Weight-Volume							
Specific Gravity 60°/60°F	.831	.847	.854	.871	.878	.881	.894
Pounds/gallon	6.92	7.04	7.11	7.25	7.31	7.34	7.44
Color							
N.P.A. or A.S.T.M.	1.5	1.5	1.5	1.5	1.5	1.5	<1
Flash (Tag), °F	230	235	245	280	295	360	475
Pour Point (ASTM) °F	−65	−35	−25	0	5	+20	+35
Iodine No.	53	46	43	36	34	33	32
Refractive index (20/D)	1.4655	1.4730	1.4759	1.4860	1.4886	1.4918	1.4955

Information

For additional information on INDOPOL Polybutenes write for INDOPOL Technical Bulletin 12. Your request will be given prompt attention.

INDOIL CHEMICAL COMPANY

INDOIL® CHEMICAL PRODUCTS

910 SOUTH MICHIGAN AVENUE, CHICAGO 80, ILLINOIS

SPECIALTIES . . . .

Chemical Corp. (New York) is now selling catalysts for use with silicones in such applications as waterproofing textiles and leathers. Offered: both stannous and zinc catalysts.

•

More than Bounce: A new silicone rubber, claimed to have characteristics previously unavailable in such rubbers, has been introduced by Linde Air Products. Tagged W-96 Silicone Gum, the material is said to be simple to cure and compound, to have "unusually low" compression set, and to be compatible with carbon black fillers.

•

Epoxy Casts: For electronic applications, Emerson & Cuming, Inc. (Canton, Mass.) is now selling an epoxy casting resin. Stycast 2340M, as it is called, is supplied as a two-component system.

•

Short, Tapered: Paintbrush makers can now use 2-in. and 2¼-in. nylon bristles. Du Pont has added these lengths to its supplies of Tynex tapered nylon bristles.

•

Big Payoff: U.S. Dept. of Agriculture entomologists estimate that chemical control of grasshoppers (generally with aldrin) saved about 200,000 tons of livestock forage valued at $3 million in the West last year. Applied as sprays, and in poison baits, the aldrin also saved an estimated $486,000 in forage from Mormon crickets. The rangeland treated was in Colorado, Idaho, New Mexico, Oregon, Texas, Utah and Wyoming.

•

Antistatic Rinse: An antistatic rinse, Cling-Free, is now being marketed by Ade-O-Matic Co. (Chicago). It comes in two sizes: 89¢/6 oz., $1.29/12 oz. The container is a polyethylene squeeze bottle.

•

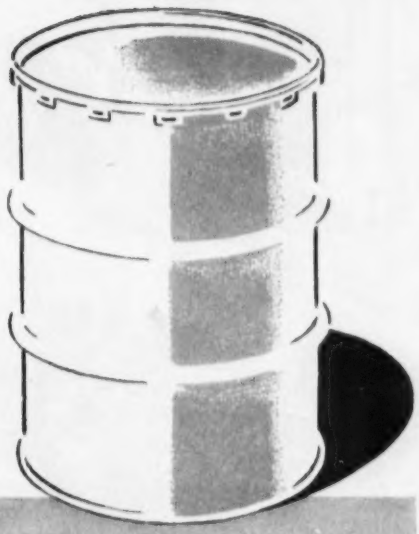
For Garbage Cans: Irwin-Willert Co. (St. Louis) now offers a garbage can deodorant in an 11-oz. aerosol that sells for $1.49. Flush-Clean is said not only to end odors but also to keep flies away, repel dogs and cats.

•

Wetting Agent: Aquators Corp. of America (Bryn Mawr, Pa.) now offers a wetting agent to reduce water runoff, help new grass, cure brown spots. A quart retails for $5.95, is mixed with water in a sprinkling can, will cover 1000 sq. ft.

Harshaw

Sodium Methylate SPEC 101



Packaged in airtight steel drums of 25, 50 and 200 lbs. net

Free Flowing white hygroscopic powder

Sensitive to air and moisture

Packs 4.6 pounds per gallon

Formula $NaOCH_3$

Formula Weight 54.03

CHEMICAL ANALYSIS

Sodium Methylate Typical 97.5%	Methanol Free 0.5
Sodium Hydroxide 0.5	Soluble in Methyl Alcohol
Sodium Carbonate 1.2	Decomposed violently by water
Sodium Formate 0.3	

Standard 95.0% min.

also available

Sodium Methylate Liquid

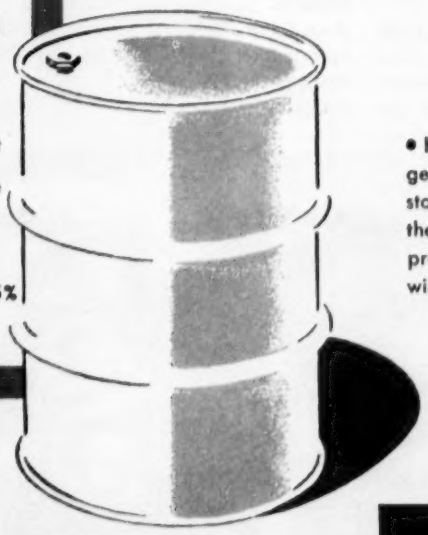
SPEC 102

Packaged in Steel Drums 425 pounds net

25% solution of sodium methylate in methanol

Analysis:

Sodium Methylate Content 24.5 to 25.5%



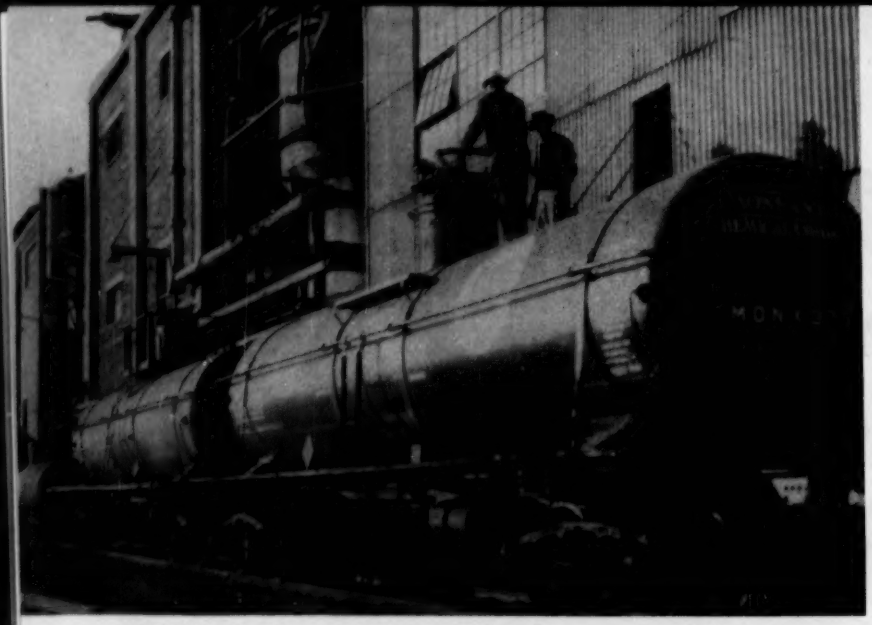
• Harshaw warehouses have been geographically located and amply stocked to fill your orders and ship them without delay. If you have a problem our technical service men will work with you toward its solution.

THE HARSHAW CHEMICAL CO.

1945 East 97th Street, Cleveland 6, Ohio

Chicago 32, Illinois • Cincinnati 13, Ohio • Detroit 28, Michigan • Houston 11, Texas
Los Angeles 22, California • New York 17, N. Y. • Philadelphia 48, Pennsylvania
Pittsburgh 22, Pennsylvania

HARSHAW



ARRIVAL of tank car starts DAP operation rolling as men couple hoses, prepare to pump phosphoric acid into new storage tanks.

Operation Sidetrack

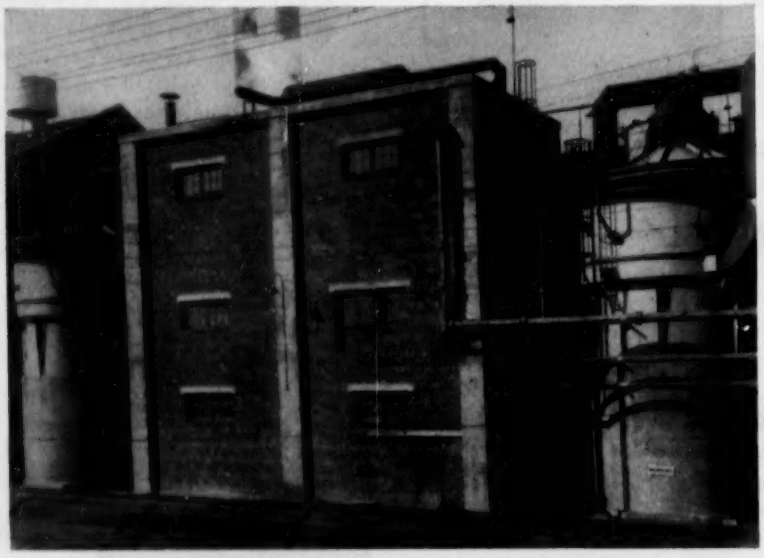
Like old-time trainmen shunting creepers aside to make way for a freight-carrying express, Colorado Fuel & Iron Corp. last fortnight (CW Newsletter, Jan. 22) sidetracked production at its Pueblo, Colo., mill from slow-moving ammonium sulfate to more marketable diammonium phosphate, made the switch with a minimum of operational changes.

Said to be the first commercial DAP operation based on by-product coke-oven ammonia and electric-furnace phosphoric acid, the process was developed by CF&I in technical collaboration with Monsanto and Koppers.

The heart of the process is pretty much the same as in the high-purity processes employed by such companies as Victor and Monsanto, which have been making DAP as a high-priced specialty item. But CF&I uses less pure raw materials, is not interested in purifying the end product since there already is a waiting fertilizer market for the material (which analyzes to 74% utilizable plant nutrients, as compared with only 20.5% for ammonium sulfate fertilizer).

Matter of Timing: The present process centers about the use of electric-furnace phosphoric acid. Earlier attempts based on wet-process acid proved unfruitful* because impurities such as iron and aluminum precipitated out, retarded filtration. Consequently, commercial debut of the operation had to await a buyers' market in electric-furnace acid, even though

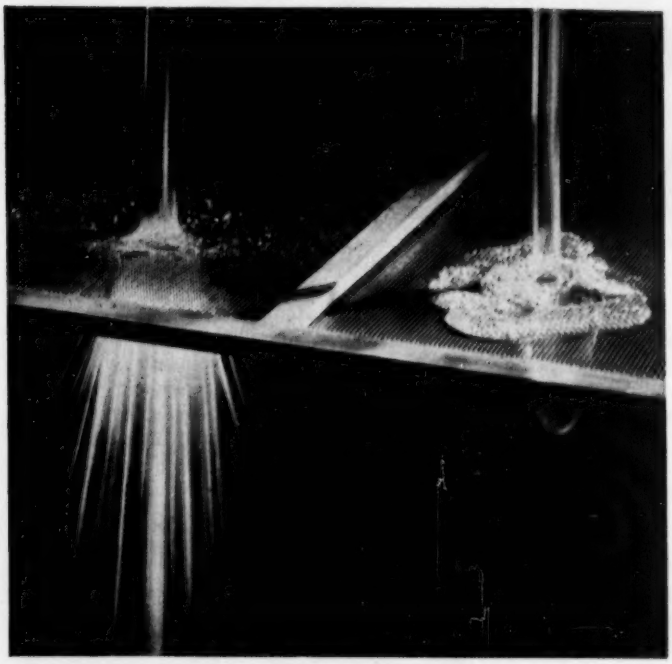
* TVA recently revealed that it had successfully carried out pilot-plant operation of a DAP process based on wet-process phosphoric acid.



TWO GIANT saturators flank structure housing large part of operation cycle.

INSIDE, production men maintain constant close check on mother liquor tanks.

WIDE CHOICE OF VISCOSITIES MAKES METHOCEL YOUR MOST VERSATILE THICKENER



Illustrating the wide variety of viscosity types available in Methocel—(left) a barely viscous 2% aqueous solution of 15 cps. going through ordinary mesh screening; and (right) a 2% aqueous solution of 4000 cps., so thick it will hardly pour.

Widest viscosity range of any gum offered—*nine different viscosity types*—makes thickening with Dow methylcellulose more efficient and economical

The thickening action of Methocel® (Dow methylcellulose) has led to definite product improvement for some, low-cost viscosity control for others . . . what's your problem?

To assure the most effective viscosity for your particular application, Methocel is offered in a selection ranging from the lowest, 10 centipoise, through seven intermediate types, to the highest at 7000 centipoise. Colorless, tasteless, odorless and neutral in its aqueous solutions, Methocel is available to you as a fine white powder.

You can depend on the ready availability and uniform high quality of Methocel since it is a synthetic gum, subject to rigid production control. Send the coupon for a free sample of this superior gum—we'll also include complete information on properties and present uses to aid evaluation in your own laboratory. THE DOW CHEMICAL COMPANY, Midland, Michigan.

SEND FOR YOUR EXPERIMENTAL SAMPLE

THE DOW CHEMICAL COMPANY
Dept. ME1190B-3, Midland Michigan

Wide viscosity range of Methocel is available—please indicate use field____

_____

Name_____

Title_____

Company_____

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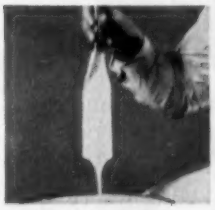
City_____ Zone_____ State_____



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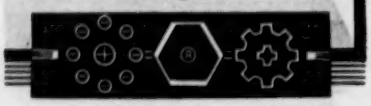

Story begins on p. 50

DAP COMES in for close scrutiny as it comes out of the centrifugal drier.

the process was successfully pilot-planted last summer.

For the most part, the new process closely resembles the standard sulfate recovery of ammonia from coke-oven gas, using phosphoric rather than sulfuric acid as the absorbent. Essentially, the only changes that had to be made involved installation of two new 20,000-gal. neoprene-lined tanks for acid storage and a new series of controls to provide the added regulation required by the DAP operation.

As the process is set up now, gas coming from the coke oven is first cooled and treated to remove water vapor and tars. It is then piped into a standard sulfate saturator unit where it is bubbled through a solution of phosphoric acid, forms a crystal slurry of diammonium phosphate. The slurry goes to a feed tank; from there it is metered to a centrifugal drier where the larger crystals are separated from the mother liquor. The mother liquor is recycled to the saturator while the crystals pass on to an auxiliary drier before going to storage or bagging.

Matter of Balancing: Of primary importance, pH is closely regulated by control meters that tie in with a constant level feed tank, balance the supply of acid to the mother liquor in the saturator. The solution is held slightly on the acid side to keep ammonia losses at a minimum. By the same token, increases in acidity are closely controlled to prevent formation of monoammonium phosphate rather than the di-compound.

Similarly, temperature, hygroscopicity, and the like, must be closely regulated to insure maximum ammonia absorption, proper-crystal size and stability, and the absence of caking during storage. On the other hand, the material, unlike ammonium sulfate, requires no washing or neutralization during drying.

HOPPER automatically fills bags with fertilizer, marks end of process line.

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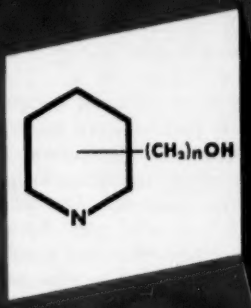

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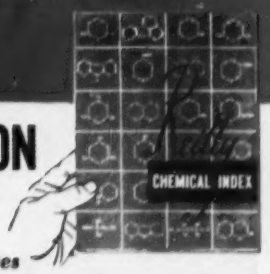

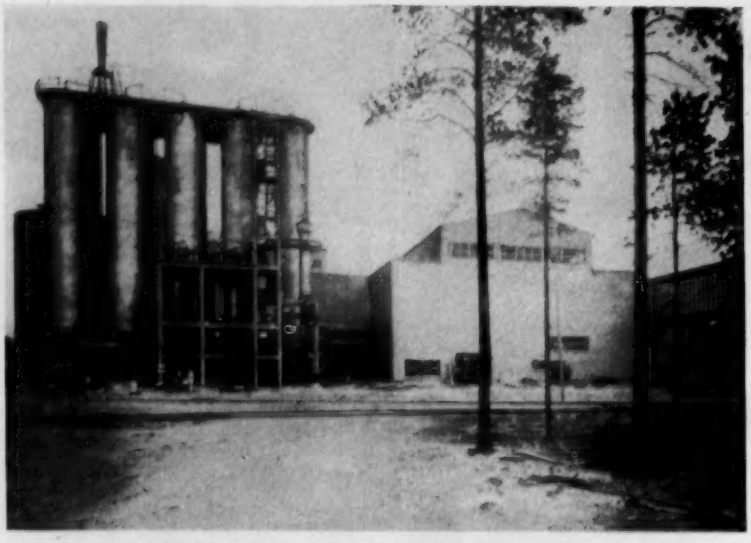

TYPPI OY NITRIC ACID PLANT: In the Arctic, a new approach to ammonia.

Under the Arctic Sun

Seldom are frozen assets a problem for chemical engineers to worry about; but then, chemical engineers are seldom called upon to build an ammonia plant in Oulu, Finland—a scant 140 miles from the Arctic Circle—and produce ammonia in an area barren of fuels and raw materials.

Given six months of sunlight and some American pilot-planting, chemical men solved the problem. Just how well they succeeded was revealed last week when general contractor Uhde told *CW* that plans to double capacity are now under consideration.* Moreover, it was learned that three similar plants (in Japan, Spain, France) are nearing completion—the one in France is slated to go into operation this summer.

Actually, the problem was solved two years ago when Finland's Typpi Oy put the Koppers-Totzek gasifier onstream, demonstrated for the first time commercially that high-grade synthesis gas—stepping stone to ammonia—could be produced from low-grade or noncoking coals, lignite, peat, or brown coal. But the significance of the development grows each day as the market for ammonia continues to expand (*see p. 75*) and the search for new processes starts to boil (*CW, June 6, '53, p. 36; CW, June 26, '54, p. 105; CW, Dec. 4, '54, p. 50*).

Even in those countries comparatively rich in fuels and raw materials this diversion from the natural gas trend is especially significant in light of known fuel reserves.* And where ammonia is currently made by the water-gas method, this coal gasification process could outdate coke ovens and gas generators, help ease plant pollution.

Arctic Approach: Thus far the Oulu plant has operated on Upper Silesian gas coal and crude oil; it is equipped to handle Bunker C oil, and serious consideration is being given to the consumption of peat (Finland's only indigenous carbon deposits). The plant has been in continuous operation for a little over two years, yielding a high-purity synthesis gas that enables Typpi Oy to turn out ammonia 10-15% above rated capacity of 60 metric tons/day.

Set beside the Oulu River, the plant draws upon the stream for all its cooling water needs throughout the year. (Water temperatures range from a winter low of 32 F to a summer high of 63 F.) Equipment was designed

* Friedrich Uhde G.m.b.H. (Dortmund, Germany) represented in U.S. by The Uhde Corp., (New York).

* Breakdown of U. S. fuel resources as estimated by *Chemical Industries (March '50)*: 98.8% coal and lignite, 0.8% oil shale, 0.2% petroleum and 0.2% natural gas.

Where's This Plant?

See p. 56 for Answer

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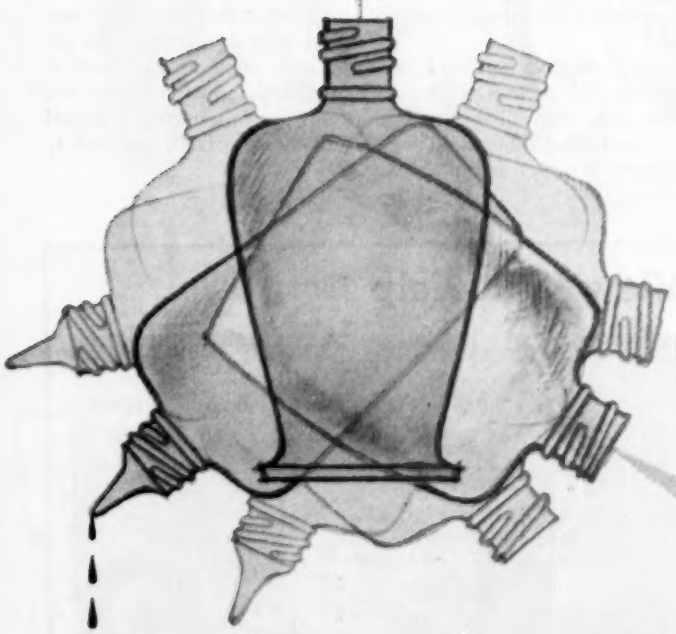

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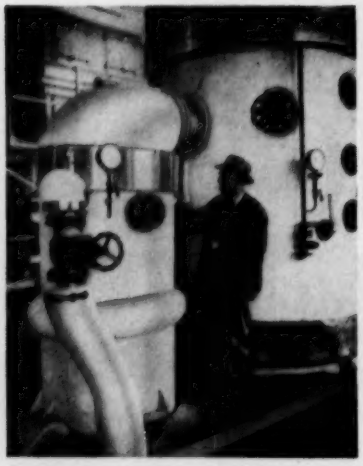

EVAPORATOR: Severe winters forced much of the equipment indoors.

with the long, severe Finnish winters in mind; most of it is set up to permit rapid servicing even at the lowest temperatures while some pieces, such as the desulfurization unit, are indoors.

An anomaly of sorts, actual pilot-planting for the Finnish works was carried out thousands of miles away in the much warmer climate of Louisiana, Mo. Here, Koppers Co. Inc. (Pittsburgh), under contract to the Bureau of Mines, built a plant for the gasification of coal dust, centered it about the Koppers-Totzek gasifier. Making free use of data gathered by Heinrich Koppers G.m.b.H. (Essen, Germany), the Pittsburgh firm readied the plant for operation within a year. And the experience gained from operation of this unit was the basis for the first commercial unit in Finland.

Coal Fired: In this process, bituminous coal is used for the first time in a continuous, commercial operation to produce a high-grade synthesis gas. The raw coal is dried, pulverized to a fine dust in a ball mill, then fed into a refractory-lined gasifier together with steam and oxygen. Uniform delivery of the coal dust-oxygen mixture to the gasifier, necessary for constant and consistent operation, is provided through controlled charging of the coal hoppers.

After a short reaction time in the gasifier, the coal is converted into synthesis gas (principally carbon monoxide and hydrogen) and ash. Part of the ash falls into the ash pit of the gasifier; most of it is carried entrained in the gas effluent, which passes through two waste heat boilers into separators where the remaining ash is removed.

After passing through a series of coolers, scrubbers and an iron oxide desulfurization unit, the effluent is delivered to a gas holder, compressed to 25 atmospheres. It is then fed to a shift converter where the carbon monoxide reacts with steam to form more hydrogen. From the converter, the gas passes through a water scrubber, which removes carbon dioxide. Nitrogen is added, and the balanced mixture is compressed in two stages to 125 atmospheres, passed through a copper liquor unit for removal of unconverted carbon monoxide. Then, after passing through a caustic soda cleanup scrubber, the synthesis gas is further compressed to 325 atmospheres and fed to an ammonia synthesis unit.

About 20% of the ammonia produced is processed to ammonium sulfate; half of the rest is converted into nitric acid, neutralized with the remaining ammonia to form ammonium nitrate.

In light of the low average air and cooling water temperatures at Oulu, Typpi Oy decided that a low-pressure nitric acid plant producing an acid of 54% to 55% concentration would be the most economical unit to operate. For initial concentration of the ammonium nitrate solution, the process takes advantage of the heat of neutralization, uses an evaporator for additional concentration. The melt is then mixed with ground limestone and prilled; the prills are cooled, coated with diatomaceous earth and sent to storage.

A Front View Will Help

NO, IT ISN'T trick photography. Actually a plant within a plant, this unit is located in Monsanto Chemical Co.'s Nitro, W. Va., plant is a complete scale model of the host works.

It is used to take measurements of walls, roofs, and outside areas, and, says Monsanto, saves many hours of engineering time in making preliminary layouts of storage tanks, roadways, and the like. Erected over a period of years, the model is continually updated as changes are made in the parent plant.

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ETHYL CORP.'S WOLF: His unusual experimental fungicides are pointing for . . .

Broad-Spectrum Rewards

A new band of fungicides has suddenly appeared on the research horizon. Made up of s-triazine derivatives, it is by no means an immediate threat to its commercial counterparts. But current field evaluation studies could illumine a bright future for the experimental group.

It all depends on how it fares in tests being conducted in many states by U.S. agricultural experiment stations.

Preliminary studies show the materials* to possess a broad range of activity against the common agricultural fungus pests; 2,4-dichloro-6-(*o*-chloroanalino)-*s*-triazine (coded B-622), the most effective member, exhibits activity against early and late tomato blight fungus, apple scab, celery early blight, muskmelon leaf spot, onion-foliage diseases, leaf diseases of ornamentals, potato late blight, tomato anthracnose, dollar spot and turf diseases.

Moreover, the arylamino-*s*-triazines, in general, display little or no toxicity to the foliage of bean, corn and tomato plants when applied as a 1% spray. That, in a nutshell, is the story told by the biological researchers Paul H. Schuldt and M. M. Baldwin who evaluated the chemicals at Boyce Thompson Institute (Yonkers, N.Y.) and Battelle Memorial Institute (Columbus, O.), respectively.

Equally interesting is the chemical end of the probe, piloted by Ethyl Corp. researcher Calvin Wolf in the company's Detroit laboratories. Wolf's triazine derivatives were prepared by reaction of cyanuric chlorides with arylamines or phenols. By control of reaction conditions, he reports, it is possible to replace the halogens of cyanuric chloride in a stepwise manner. Products reportedly were obtained (in high yield) as stable solids that are readily formulated as micronized wettable powders.

Cost now would appear to be a not inconsequential obstacle to the compounds' commercial aspirations. Cyanuric chloride, obviously, is the determining economic factor, and it goes for $1.25/lb. But that's 10¢ lower than the cost of the chemical six months ago; there's a good reason to believe, moreover, that the bottom of the price slope will not be reached for some time.

Cause for this optimism: the recent launching of American Cyanamid's new ton-a-day cyanuric chloride plant at Warners, N. J. Wolf would like to see the tab on this starting material drop to about 75¢/lb. in order for the triazines to have an even competitive break with other toxicants in the agricultural field.

Whether this goal can be realized is conjectural. Nevertheless, potential customers may well be willing to pay a premium for the broad-spectrum activity of B-622 and its fungicidal cousins.

And not to be overlooked is the possible intensification of international competition in the manufacture of cyanuric chloride. The other major world producer right now is Degussa, in Frankfurt, Germany; Ethyl Corp. has used its material as well as Cyanamid's.

But speculation on the probable future price of cyanuric chloride is, perhaps, premature, because B-622—the most advanced member of its species—still requires a lot more field evaluation. Ethyl Corp., which has applied for patents on the new toxicants, is understandably biding its time, awaiting results before making plans.

* Comprising these *s*-triazine derivatives, among others: dichlorophenoxy-; dichloro-β-naphthoxy-; dichloro-*o*-chlorophenoxy-; di(2,4-dichlorophenoxy)chloro-; tri(2,4-dichlorophenoxy)-; (dichloropentachlorophenoxy)-; and a number of N-aryl-substituted-2,4-dichloro-6-amino-*s*-triazines.

Glycerine Kudos

Last week the Glycerine Producer's Assn. convened at New York's Waldorf-Astoria hotel, presented its 1954 research awards to eight scientists whose studies embrace a montage of glycerine subjects.

First prize (honor plaque and $1000) co-winners – Professor Robert Summerbell, of Northwestern University (Evanston, Ill.) and James Stephens, American Cyanamid Co. (Stamford, Conn.)—got the nod for their proof of the structure and configuration of a number of glycerine derivatives and related chemical compounds.

Their work spanned four years at Northwestern University's chemical laboratories, included structural close-ups of 2,5- and 2,6-disubstituted dioxanes, derivatives of the cyclic diethers of glycerine. Also established were the configurations of diglycerol, diepichlorohydrin, diepiiodohydrin, and other derivatives. Several new

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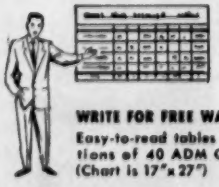

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derivatives, including potentially important dicarboxylic acids, were likewise prepared and studied.

An honor certificate and $300 went to five co-winners of the second prize. Their feat: establishing the biological assymmetry of glycerine. The winners worked as two independent teams, one of which was comprised of Robert Swick and Akira Nakao at Argonne National Laboratory (Lemont, Ill.). The other: Harland Wood and Per Schambye, of Western Reserve University (Cleveland), and G. Popjak, National Institute for Medical Research (Mill Hill, London).

Medical researcher Henry Sloviter, of the University of Pennsylvania (Philadelphia) School of Medicine, garnered third prize, an honor certificate and $200, for a new simple method of transfusing thawed red blood cell-glycerine mixtures directly into the veins. The find may make practical the prolonged storage and stockpiling of red blood cells for use in national emergencies. His process is based on the discovery (made in England about four years ago) that red blood cells, in glycerine solutions, survive freezing and thawing.

Sloviter's method consists of adding a quantity of concentrated glucose solution to the thawed blood cell-glycerine mixture so that the osmotic pressure due to the glycerine inside the cells is approximately balanced by the osmotic pressure due to glucose outside the cells.

CYANAMID'S STEPHENS: New light on obscure cyclics.

(Advertisement)

CHEMICALS OUTLOOK

February, 1955

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

COMING! NEW PIPERAZINES AND PYRAZINES

Wyandotte Chemicals will announce shortly that commercial methods have been completed for the manufacture of important piperazines and pyrazines.

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Many times, a block polymer can: eliminate one or more ingredients in a formulation, provide properties heretofore not obtainable; cut down processing time; give better over-all results; save other more costly materials; extend the usable life of the end product; completely eliminate an undesirable property in a product.

Consequently, block polymers are new, unique, different.

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Pluronics are available in liquid, paste, flake, powder, or solid-cast form. We have compiled much data on their physical and surface-active properties and applications. In writing, please give us as much data as possible on your proposed use, to enable us to give you the maximum help.

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WESTINGHOUSE'S GAINER: For a tighter grip, halogenated phenyls.

Chemical Balancing Act

Compromise is the silicone researcher's constant companion in his search for profitable molecules. To build the right balance of performance characteristics into a compound, he is always taking something away from one physical property to improve another. Last week, a long-run balancing act reached a successful climax in Pittsburgh, Pa., where Westinghouse engineers were testing a brand-new silicone lubricant.

Result of years of research, the synthetic lube is said to show good thermal stability and viscosity over the −65 to 500 F temperature range. Consequently, it will be bidding for a piece of the military jet-aircraft lubricant market now cornered by fatty acid diesters.

The Westinghouse entry is the product of a long-standing effort to increase the lubricity of silicones. The silicones are ideally suited in many ways for high-temperature lubricants. They remain stable under extreme heat, possess a favorable viscosity-temperature curve and other desirable properties such as high flash temperature and low pour and freezing temperatures.

There's just one hitch: commercial silicone oils have never exhibited enough lubricating power on ferrous metal surfaces. The deficiency shows up most strikingly under boundary lubricating conditions where the film of lubricant between metal surfaces approaches the thickness of two or three layers of molecules.

Westinghouse materials engineering department probers at East Pittsburgh, Pa., under chemical development head Gordon Gainer, attacked this silicone shortcoming on the molecular level. Assuming that the unsatisfactory silicones are not adsorbed strongly enough on steel surfaces to form a close-packed lubricating film, they set out to produce a better surface-binding molecule.

There are two possible ways of altering readily the siloxane structure: substituting for oxygen in the chain; and introducing new chemical groupings in partial replacement of silicon-linked hydrocarbon groups.

The latter gambit proved most practicable and most effective. By replacing phenyls with halogenated phenyls, the lubricity of the silicone is reported to be "considerably increased" at a little expense to thermal stability. A number of halogenated-phenyl derivatives (e.g., *p*-bromophenyl, 3,4-dichlorophenyl, trifluoromethylphenylsiloxane, etc.) were synthesized and evaluated; of the entire group, 3-trifluoromethyl-4-chlorophenyl was most effective in reducing wear by the Falex test.*

The modified silicone subsequently hurdled a row of additional laboratory tests of its load-bearing capacity, viscosity-temperature behavior, etc. Moreover, claims Gainer, the new lube performed satisfactorily in a Westinghouse turbojet engine trial.

Westinghouse is not going into silicone manufacture on the strength of its lubricant research. The new halogen-containing silicone will be produced by Dow Corning (Midland, Mich.) under a cooperative agreement.

Cost of the product is $5-10/lb.—about the same as the new silicone lube revealed to be in development at General Electric (Waterford, N.Y.) (*CW, Dec. 25, '54, p. 64*). Also a halogenated derivative, the GE agent is methylchlorophenylsilicone. Result of five years of research, it is covered in a recently granted patent, reportedly possesses a thermal-operating range of —100 to 400 F.

According to GE, the product represents the successful culmination of a project aimed at the development of a silicone that lubricates as well as a hydrocarbon oil and retains all the traditional silicone properties. Drum quantities of the material, tagged 81406 by GE, are being supplied to the Air Force and the aviation industry for evaluation.

Outside of aircraft applications, the company foresees uses for the modified silicone in a flock of the so-called "hot" industries—e.g., steel, glass, ceramics, etc.). In anticipation of broader market development efforts, GE has on order new production equipment that will substantially enlarge the now-developmental production capacity for the chemical. Ultimately, GE hopes, cost will come down to about $4/lb.

That's not exactly trifling. But cost is a secondary object to the military; and maintenance economies made possible by the durable silicones could have strong appeal for industry.

* In which a cylindrical metal pin is rotated between two metal V blocks under fixed load and while flooded with test oil.

From cake to clothing

Anhydrous Ammonia, one of Atlantic's many petrochemicals, may have an important part in producing the food you eat, the clothing you wear, dozens of things you depend on for better living. That's why you see the miniature oil refinery in the illustration.

This new member of Atlantic's chemical family has a variety of uses. On the farm, for instance, Anhydrous Ammonia is released into the soil where it supplies vital plant food to increase crop yields. Its use in the manufacture of synthetic fibers means new and better fabrics for clothing of all kinds.

Manufacturers rely heavily on ammonia for the making of hundreds of products . . . nitric acid in one plant, explosives in another, plastics in a third. Anhydrous Ammonia is only one of the many chemicals, produced by The Atlantic Refining Company, for which industry of all kinds is constantly finding new uses.

Atlantic sales engineers will be glad to work with your technical personnel to help improve quality, reduce costs, or develop new products. Write for information; just ask us how Atlantic petrochemicals can be helpful to you. The Atlantic Refining Company, Dept. H-2, 260 South Broad Street, Philadelphia 1, Pa.

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Here is the first packless positive displacement pump that combines high precision with continuous flow characteristics.

• For precision metering of a wide range of small volume flows, the HILLS-McCANNAMETER offers a completely new concept of pumping. It has the pressure producing possibilities of a positive displacement type pump. It has the ability of a diaphragm type unit in pumping hard-to-handle fluids. It has the continuous flow characteristics of a centrifugal type pump (at flows over 100 c.c./hr.).

The HILLS-McCANNAMETER precisely meters flows from 5 c.c. to 6 gal. per hour. Standard models will develop pressures to 2500 psi, special designs to 10,000 psi. Detailed specifications and operating data are given in Bulletin AP-54. Write for your copy, today. HILLS-McCANNA CO., 2445 W. Nelson St., Chicago 18, Ill.

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metering and proportioning pumps

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On the Fire

The lab construction surge continues unabated, was paced this week by these new projects:

• Diamond Alkali Co. disclosed plans to modernize and enlarge key facilities of its Painesville, O., research center. The estimated cost of $200,000 includes the firm's planned radiation lab *(CW Jan. 22, p. 58)*. Diamond intends to step up investigations in alkali and electrolytic products, plastics, calcium carbonates, chlorinated organics, and chromates.

• Seven chemists will occupy 4000 sq. ft. of floor space in a new laboratory opened by Michigan Chrome and Chemical Co. (Detroit). They will be engaged in plastisol development and in customer service on coating problems.

• Scheduled to begin early this year, construction of new research facilities of Warner-Chilcott Laboratories will double the firm's lab space at Morris Plains, N.J., house expanded pharmaceutical investigations.

• Battelle Memorial Institute (Columbus, O.) is installing what it claims will be one of the country's largest gamma-radiation sources—10,000 curies of cobalt-60. An initial installation of 2000 curies is expected to be available to industry for contract studies by Feb. 15.

Forerunners

A basketful of new syntheses, gleaned from laboratories on three continents, are the potential seeds of future products and processes:

• A synthesis of boron hydrides from borides and hydrogen, developed in the research laboratories of General Electric (Schenectady, N.Y.), offers a direct route to these commercially important chemicals. Ordinarily, boron hydrides are made by the action of acid on magnesium boride.

• Aliphatic fluorine compounds are yielded by a method claimed to be the discovery of Hungarian chemists at Budapest's Technical University. Alkali fluorides and halogenated aliphatics are starting materials; irradiation with ultraviolet replaces the aliphatic-anchored (nonfluorine) halogens with fluorine liberated from the inorganic salt.

• Total synthesis of the antibiotic puromycin from D-xylose has been

Celanese Plastics Division is now a direct source for Polyvinyl Acetate Emulsions

CELANESE* PVAc

from Celanese-produced monomer . . . homopolymer and copolymer resin emulsions for latex type water based paints and primers

The Celanese PVA series of Polyvinyl acetate emulsions—both the homopolymer and copolymer types—is available for immediate shipment. Developed by the Plastics Division of Celanese, these emulsions are processed from Celanese—petro-basically produced monomer, and engineered to meet the rigid requirements of the paint industry.

With the growing popularity of latex-type paints in the *do-it-yourself* market, and the increased use of vinyl products, this new Celanese source gives manufacturers the dependable, continuous supply and price stability they are looking for.

The Celanese technical service department is set up to give detailed assistance in the development of paints with polyvinyl acetate emulsions. Use the coupon below to receive the New Product Bulletin on PVAc emulsions for paints or write to

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Plastics Division, Box 163-B,
290 Ferry Street, Newark 5, N. J.

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Plastics Division, Box 163-B,
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2. Preparation of calcium alcoholates.
3. Preparation of calcium salts of organic acids.
4. Deoderization and desulfurization of hydrocarbons.
5. Fat and oil rearrangements and isomerizations.
6. Desiccant for hydrocarbons and gases.
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8. Inorganic reductions.

Availability: Research and pilot plant samples
Write for complete information.

MH Metal Hydrides INCORPORATED

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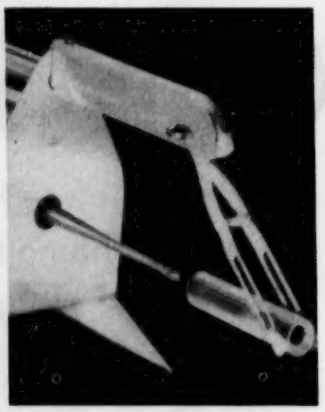
accomplished by the Lederle Laboratories (division of American Cyanamid Co.) team of R. R. Baker, J. P. Joseph, R. E. Schaub and J. H. Williams.

• Alcohols and ethers have been converted into carboxylic acids by means of carbon monoxide in recent studies by Walter Reppe and others at Badische Anilin- & Sodafabrik (Ludwigshafen, Germany). Conversion of methanol and carbon monoxide into acetic acid is reported to be promoted by nickel or nickel carbonyl in the presence of cuprous iodide or nickel iodide.

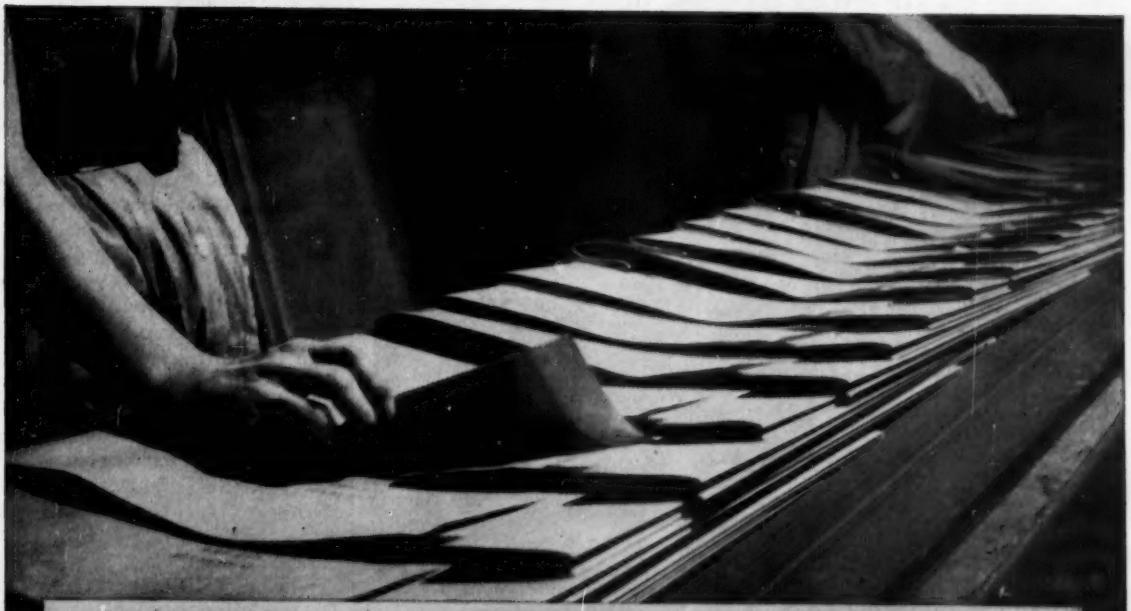
• German patent 869,489, recently assigned to Richard Wegler of Farbenfabriken Bayer, covers water-soluble compounds made by reaction of acrylyl halides with alcohols.



Picture of Progress

THIS DEVICE, introduced last week by the Lofstrand Co. (Rockville, Md.), is perhaps the most eloquent possible testimonial to the American researcher's high standard of laboratory living. A mechanized test-tube washer, it consists of power-driven rotating nylon brushes that are said to gently but effectively scrub out dirt. An operator feeds glassware to the machine, production-line fashion, removes the cleansed product. Extra touch: the plastic guide *(clearly shown)* encloses the brush when it is idling, prevents water from spattering about.

V-C® Inspections Mean Better Bags for You



Inspection of newly tubed bags just before bottoming operation. Careful inspections mean better bags for you.

Inspection of finished pasted bags. Because these pasted closures must stand great weight and shock, special care is taken to see that all surfaces are absolutely bonded.

Final inspection of sewn-valve bags. Specially-trained inspectors examine every bag before it moves to the baling machine.

EVERY STEP in the manufacture of V-C Multiwall Bags is controlled by a system of rigid inspections. Operators are specially trained to watch for the slightest imperfections. It will pay you to put V-C's bag-making experience and skill to work on your packaging problems. Write for full information about better-built V-C Multiwall Bags, or discuss your bag requirements with a V-C representative.

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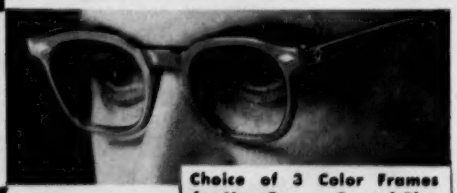
All Styl-Ize Spectacles meet Federal Specifications for Optical Qualities, Impact Resistance and Strength of Materials.



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Examine your product . . . objectively. Can odor improvement mean sales improvement? Bad odors can mean poor sales volume.

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RESEARCH . . . . . .

phenols, amines, or sulfonamides in the presence of pyridine bases. Good emulsifying properties are claimed for the end products.

• According to researchers at Industrial Testing Laboratories (Osaka, Japan), cuprous chloride and mono- (or tri-) ethanolamine is a better catalyst than is ammonium chloride for the liquid-phase conversion of acetylene and hydrocyanic acid into acrylonitrile. Yields are reported to be higher with the new combination.

• A populous family of polyamines can be made by reductive amination of polyketones derived from ethylene and carbon monoxide. That's the word from DuPont researchers, who report that the amines are long-chain hydrocarbons with lateral primary, secondary, or tertiary amine groups, range physically from amber liquids to colorless waxes. Surface-active properties are claimed for the salts, N-oxides, and quaternary derivatives of these polyamines.

Drug Flurry

Pharmaceutical research is well represented in the week's news.

• A series of bis-fluorenyl-bis-quaternary ammonium compounds have been found to be potent curare-like muscle relaxants in tests with dogs, rabbits, and mice, says Irwin, Neisler Laboratories (Decatur, Ill.).

• Salicylic hydrazide, acetylsalicylic hydrazide, N.N-diethylsalicylamide, gentisamide, and *o*-ethoxybenzamide (in that order) were reported to be effective as fever depressants in tests at Italy's University of Naples.

• Several lipid-soluble 4-acyl pyrogallols displayed the ability to protect mice subjected to lethal radiation at France's Radium Institute.

• A study of the relation between structure and pharmacological activity of benzodioxan derivatives, carried out at Rome's Instituto Superiore Santa, turned up the finding that extremely small dosages of N-(1, 4-benzodioxan-2-yl-methyl)-N′-methyl-β-alanineamide reversed the effects of adrenalin.

• Researchers at Soc. Labs., Labaz (Brussels, Belgium) report the meriquinone of 2′-methyl-4,4′-(3-aminobutylidene) diphenol has a powerful and long-lasting blood-pressure lowering effect in dogs and cats.

GOING GRANULAR?

switch to KRAFT-lok® bags!

10 good reasons
why packers of granulated fertilizer prefer KRAFT-lok Bags:
1 Eliminates snagging on packer tubes.
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8 Minimizes sifting in handling.
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Pressure tank car with new all-welded insulation jacket . . . new flued dome nozzle . . . new standardized underframe. One of many types of DURADOME tank cars.

Whatever your shipping requirements are you'll find a DURADOME tank car for your purpose. All DURADOME cars, regardless of type, use, or capacity combine *four advanced features* which make this the most revolutionary development in the tank car industry in the past 15 years!

✓ A million-dollar press actually *flues* the dome base out of the heavy center section—providing greater strength and safety . . . smooth interior surface.

✓ Superior pressure-type construction (complete ring sections) means heavier steel *all* the way around for greater durability and protection for costly ladings.

✓ Standardized all-welded underframe provides flexibility of use with tanks of all standard types and capacities . . . more economical maintenance.

✓ All-welded jacket for insulated cars—of heavier guage steel, with one-piece ellipsoidal head. Streamlined . . . more weatherproof . . . needs less maintenance.

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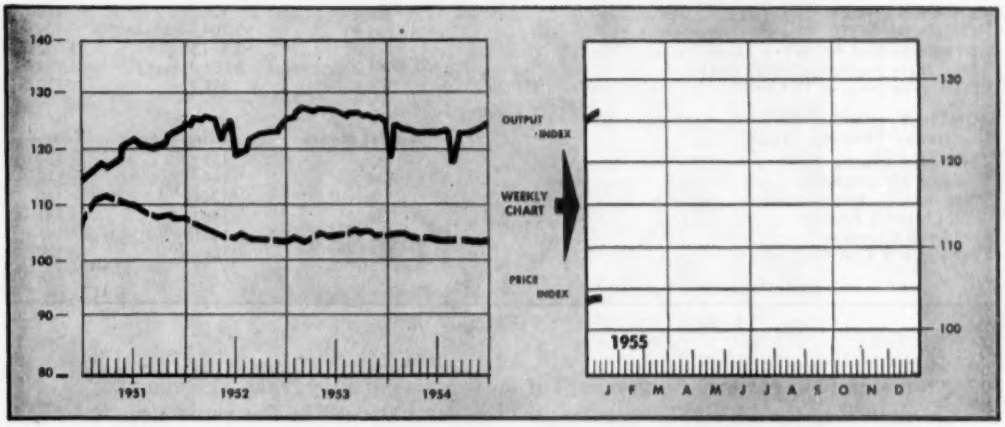

CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

By now it's unanimous—just about all general-purpose polystyrene sellers are quoting identical prices. As was indicated (*CW Market Letter, Jan. 22*), competitive factors were bound to wipe out the industry's split range.

Dow Chemical's hesitant pruning of its prices by 1¢/lb. last week—following Bakelite, Monsanto and Koppers' similar earlier action—also influenced a number of smaller firms to cut prices similarly. Thus polystyrene crystal material, for example, is now pegged at a general 29½¢/lb. level.

•

There's unanimity, too, this week, in the polyethylene film field. When Visking, the country's biggest film producer, cut schedules some 3½% to 12% (depending on type and size of order), Du Pont quickly notified its customers that the reductions would be met.

General-purpose polyethylene film is now selling for 59¢/lb., down 2¢ from the previous price.

•

At the time of last year's cuts in polyethylene film and tubing prices (*CW Market Letter, June 26, '54*), many observers discounted the probability of a polyethylene resin drop, but tacked on a qualification: it could happen when additional production began hitting the market.

The current film cuts, of course, again are stirring speculation about the resin. Lending substance to the talk that the time for reductions in the latter may be near is this: more polyethylene is—and will soon be—available. For instance, Tennessee Eastman has been producing on a commercial scale for several weeks; almost ready to trickle is Monsanto's 66-million-lbs./year-capacity Texas City installation; National Petro-Chemical's Tuscola plant, with 25 million lbs. capacity, reportedly will start up in about two months. Add too, Bakelite's third polyethylene plant now shaking down at Seadrift, Tex.

•

Monsanto also made news last week with word of the "first com-

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	126.8	126.7	123.7
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.4	104.3	105.0
Bituminous Coal Production (daily average, 1000 tons)	1,417.0	1,447.0	1,402.0
Steel Ingot Production (1000 tons)	2,061.0 (est.)	2,051.0 (act.)	1,774.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	363.3	358.7	270.0

MONTHLY INDICATORS—Production (Index 1947-49=100)	Latest Month	Preceding Month	Year Ago
All Manufacturing	130	132	124
Durable Manufactures	144	144	140
Non-durable Manufactures	116	120	110
All Chemical Products	148	148	141
Industrial Chemicals	162	162	147
Petroleum & Coal Prod.	131	128	128

mercial bulk tank car shipment" of molten maleic anhydride. The company describes the accomplishment as a "major milepost" in the rapid growth in the use of the intermediate. Simultaneously, Monsanto set a new tank car price, which, in effect, offers bulk users a 1¢/lb. saving.

Not to be outdone, National Analine—which has been shipping molten phthalic anhydride for some time—tells *CW* it, too, is making maleic tank car service available to its customers—and at a similar-to-Monsanto's price of 26¢/lb.

•

Copper sulfate is higher. The advances—ranging from 90¢ to $1.75/cwt. posted by one major producer—were part of an "iffy" prediction made a couple of weeks ago (*CW Market Letter, Jan. 15*). The qualifier then: an increase in copper metal tags. Late last week Anaconda Copper Mining, followed by a few other sellers, upped the metal by 3¢/lb., breaking through the long-established (since March '53) 30¢/lb. U. S. asking price.

A multiplicity of causes is behind the copper hike, including strikes, but tipping the scales now are these: heavier demand vs worldwide tightness in supplies; higher than U. S. prices being offered for Chilean material in overseas markets. London, for example, is quoting near-39¢/lb.

•

Price support for the 1955 crop of gum naval stores will continue. The support level: 90% of parity price of crude pine gum, unprocessed basis, as of Dec. 15, '54. That's the nub of a U. S. Dept. of Agriculture decision made known to the trade last week.

Further, says USDA, the per-unit support level will remain fixed throughout the loan period (calendar year 1955). The new program is substantially the same as that in effect in '54, except that for the two highest grades (X and WW) a premium of 10¢/100 lbs. net has been established above the base loan rate for the average-grade WG. There is also a discount of 10¢/100 lbs. on grades below WG. Last year all three had the same loan rate.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending January 31, 1955

UP

	Change	New Price		Change	New Price
Copper metal, electrolytic, dlvd.	$.03	$ .33	Copper tribasic, dealers, bgs., c.l., wks., frt. alld.	.75	24.25
Copper sulfate, cryst., bgs., c.l., wks., cwt	.90	11.25	Tallow, inedible, extra, tanks, dlvd.	.00125	.08625

All prices per pound unless quantity is stated.

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Which sizes are best for you? Why not order a trial quantity today?

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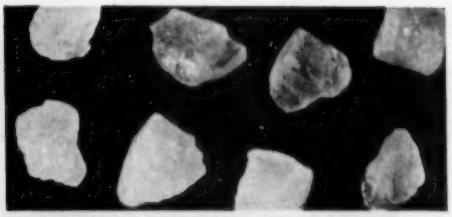
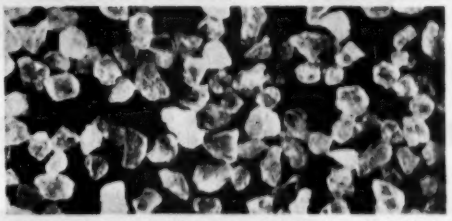


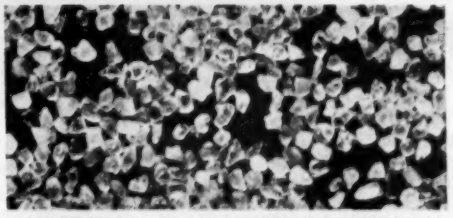
PEA NO. 1

Repackage these big sparkling crystals, just as they come from the drum. A pound looks like more . . . has extra retail appeal.



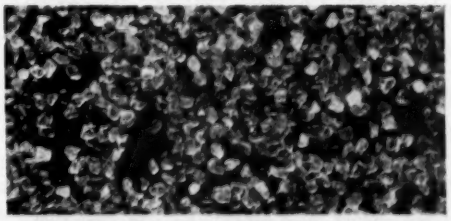
PEA NO. 2

Add variety to your mothicide line, with these finer, free-flowing crystals. They're ready to repackage as is—or can be perfumed without melting.



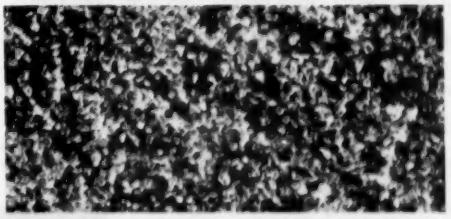
RICE NO. 1

Offer this special fine size for sprinkling in folds and seams of clothing. This crystal size sublimes quickly, to give unusually high concentration of moth-killing fumes.



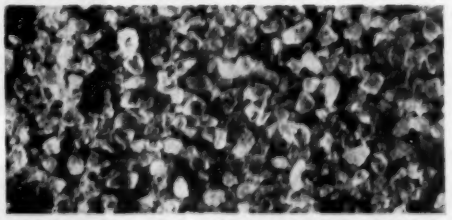
RICE NO. 2

Feed your power presses with this size. It's just right for compressing into blocks and pellets. Flows very freely, so is ideal for automatic presses where dies must be refilled rapidly.



RICE NO. 3

Use this finer size in foot-operated presses. It's free-flowing but small enough to pack and compress easily with least effort, for maximum production.



GRANULATED

Boost farm sales with this bulk-package size. It's often recommended for controlling peach tree borer, tobacco blue mold; as a weed killer in cranberry bogs; in control of poison ivy and other weeds.

POWDERED

Melt this super fine size, and ladle it into molds for blocks and pellets. It melts rapidly, saves you production time. It's easily colored and perfumed.

FREE FOLDER . . . Hooker Bulletin 454 contains much interesting and useful information on handling and using Paradi. Send for a copy today.

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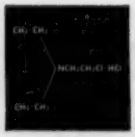
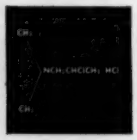
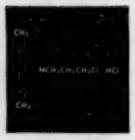


beta-Diethylaminoethyl Chloride Hydrochloride. (DEC). $(CH_3CH_2)_2\ NCH_2CH_2Cl.\ HCl$. A granular solid. Specially suited for use as an intermediate in organic chemical manufacture, including the production of antispasmodic agents and other pharmaceuticals.

beta-Dimethylaminoethyl Chloride Hydrochloride. (DMC). $(CH_3)_2\ NCH_2CH_2Cl.\ HCl$. A granular solid. Specially prepared for use in manufacture of antihistaminics and other pharmaceuticals. Other potential uses in organic synthesis. Relatively non-toxic in hydrochloride form.



beta - Dimethylaminoisopropyl Chloride Hydrochloride. $(CH_3)_2\ NCH_2CHClCH_3.\ HCl$. (DMIC). An organic intermediate similar in appearance and properties to DEC and DMC. Specially prepared for manufacture of analgesics and other pharmaceuticals. Other potential uses in organic synthesis.



gamma - Dimethylaminopropyl Chloride Hydrochloride. $(CH_3)_2\ NCH_2CH_2CH_2Cl.\ HCl$. (DMPC). A white powder of singular purity. A versatile intermediate for pharmaceutical and organic syntheses, available exclusively from Michigan Chemical.

Other widely used intermediates supplied by Michigan Chemical Corporation include Hydrobromic Acid, Methyl Bromide, Ethyl Bromide, Monobromobenzene, Trimethylene Chlorobromide, Phosphorous Tribromide and Cyclopentyl Bromide. Write for booklet "Individualized Intermediates."

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Too Much, Too Soon?

U. S. anhydrous ammonia supply, once critical, will zoom to a fantastic 4.3-million tons/year by mid-'56—if all potential producers plunge into production.

The problem confronting current ammonia makers—and slated to greet the newcomers: Will markets be broad and deep enough to absorb the impending flood?

The gap between projected capacities and current markets for anhydrous ammonia is widening. Likely consequences: braking of would-be producers' blueprinted plans;* operation of many existing plants at below-capacity, although profitable, rates; an accelerated race for agricultural and industrial outlets.

Sum-up of the current capacity† picture (*see box p. 76*): 35 plants in production as of Jan. 1 are capable of turning out an estimated 3.47 million short tons of anhydrous ammonia or 2.85 million tons N (N = nitrogen basis). At least 15 additional companies have fairly firm plans to go ahead with expansions and these should be onstream by mid-1956, or sooner. That adds another 0.88 million tons of ammonia (0.72 million tons N). Grand total by that date: a whopping 4.35 million tons of anhydrous ammonia capacity (3.57 million tons N).

How Big: What is the size of the market for this ammonia? The largest demand—fertilizer nitrogen—will move to the trade some 2.20 million tons N for the crop year ending June 30, according to the Commodity Stabilization Service (USDA). However, in the little over 2 million total the CSS includes some 420,000 tons N as imported ammonium salts (more conservative estimates envision imports of only 320,000 tons N), leaving an order of 1.8-1.9 million tons N for domestic suppliers to fill.

Add to this about 500,000 tons N for industrial uses, and the current market appears to be 2.7 million tons N, about in balance with Jan. 1 in-place capacity of 2.85 million tons.

It's not this current capacity but the upcoming potential ammonia torrent that could spell sellers' troubles. The firm capacity increase of 724,000 tons N alone—a hike of over 25%—will not likely be offset by a like increase in demand in the year ahead. And the still-nebulous expansions could complicate the situation even more.

Supporting this outlook are the sobering facts† released at year's end by USDA's Agricultural Research Service. The annual increase in nitrogen consumption for recent crop years in all U.S. (including territorial) commercial fertilizers has averaged around 200,000 tons N/year in the last three years. The upcoming 12-month period holds little promise that agricultural usage will rise by 15%.

Market analysts, likewise, see nothing like a 25% boost in industrial requirements of nitrogen, either. In fact, not a few prognosticators, a year or two ago, considerably overestimated the nitrogen demand in synthetic fibers (nylon, rayon, acrylics), as well as plastics and resins. Nitrogen consumption in industrial explosives, metal treating, refrigeration, and petroleum will probably edge ahead by only a few percentage points per year during the next five years. At best, exports may take 160,000 tons N per year.

Liquid Nutrient: By contrast, more hustling may boost demand for ammonia-based commercial fertilizers. For instance, out of the domestic nutrient total of 1.84 million tons N, the CSS tabs 410,000 tons in the form of nitrogen solutions for fertilizer mixing (ammonium nitrate with ammonia, or urea with ammonia and/or the nitrate) by the end of this fiscal year, up some 5% from the previous 12-month stretch. To that total is added another 120,000 tons N from ammonia used without compounds in ammoniating commercial fertilizers.

The direct application of anhydrous ammonia will be greater. USDA predicts a consumption close to 400,000 tons N (others say 475,000) in the present crop year, pulling 20% ahead of the '53-54 total of 333,000 tons, and up nearly 80% over the 221,000 tons consumed in '52-53. Direct application of anhydrous has grown in the Far West where vapor pressure of the compound is trapped in irrigation water, and has risen phenomenally in the Mississippi River valley where the compound is plowed under an easily tilled soil.

Turning to solid forms of agricultural nitrogen, observers say that some 360,000 tons N in the form of ammonium nitrate should clear warehouses by the 12 months ending this June 30.

Last year, U.S. makers of fertilizer-grade ammonium nitrate used up more than 725,000 tons ammonia, an 18% gain over '53's estimated 616,000 tons. Nonfertilizer ammonium nitrate production leveled off and tapped ammonia supplies for an estimated 107,000 tons in both '53 and '54.

The other major solid form of nitrogen—ammonium sulfate—has moved out to farmers at a sluggish rate, hovering around the 310,000-320,000 tons N level for three years. Forces behind the damping of domestic ammonium sulfate sales: increased supply of liquid nitrogen solutions, steel strikes, and price-depressing imports. Total synthetic and coal tar-derived sulfate output rose to an estimated 1.75 million tons in '54.

The tightening of purse strings for fertilizers and shying from year-round buying has slowed nitrogen in recent years. Three dry years in some Midwest areas have been headaches to nitrogen suppliers. Reason: nitrogen depends on rainfall for plant response in the Midwest.

In the decades to come, however, agronomists envision greater consumption of nitrogen in forage crops and grains now receiving little or no fertilizer. Growth of this demand will be spurred be increased irrgation, creation of more arable land.

Screened Scramble: Behind the scenes in the competition for the ammonia market are several well-founded economic moves. Not a few oil companies poised to enter or augment am-

* Companies at the anhydrous ammonia talking stage are legion, include: Ammonia Chemical, Arizona Gas & Chemical, Atlas Powder, Celanese, Columbia River Chemicals, Consolidated Mining & Smelting, Salt Lake City Chemical, Standard Oil of Calif., United Chemical, U. S. Steel (Gary, Ind.), Utah Chemical.

† U. S. output of synthetic anhydrous ammonia (in million short tons NH_3) with per cent increase over previous year's total: 1954: 2.67 (est) (+16.8%); '53: 2.29 (+11.5%; '52: 2.05 (+15.5%); '51: 1.78 (+13.5%; '50: 1.57.

Coal-tar by-product ammonia production (thousand short tons NH_3): 1954: 236; '53: 241; '51: 231; '51: 261.

† Preliminary Report on Commercial Fertilizer Consumption," No. 1750, Dec. 1954, by W. Scholl, H. M. Wallace and E. I. Fox.

U. S. ANHYDROUS AMMONIA PRODUCERS

COMPANY	LOCATION	CAPACITY (EST.) (thousand short tons NH_3/year) As of Jan. 1, 1955	Expansion by mid-1956
Allied Chemical	Hopewell, Va.	346	...
	La Platte, Neb.	75	75
	South Point, O.	280	...
American Cyanamid	Avondale, La.	54	...
Atlantic Refining	Philadelphia, Pa.	36	...
Brea Chemicals (Union Oil)	Brea, Calif.	85	25
Columbia-Southern Chem.	Natrium, W. Va.	...	28
Commercial Solvents	Sterlington, La.	135	...
Cooperative Farm Chemicals	Lawrence, Kan.	64	...
Dow Chemical	Freeport, Tex.	80	...
	Midland, Mich.	25	...
	Pittsburg, Calif.	7	...
Du Pont	Belle, W. Va.	230	...
	Niagara Falls, N. Y.	10	...
Food Machinery (Westvaco Chlor-Alkali)	South Charleston, W. Va.	...	22
Grace Chemical	Memphis, Tenn.	87	...
Grand River Chemical (Deere)	Pryor, Okla.	65	...
Gulf Chemical	Pensacola, Fla.	...	72
Hercules Powder	Pinole, Calif.	30	...
	Louisiana, Mo.	42	...
Hooker Chemical	Tacoma, Wash.	22	...
Ketona Chemicals	Ketona, Ala.	...	45
Lion Oil	El Dorado, Ark.	205	...
	Luling, La.	110	...
Mississippi Chemical	Yazoo City, Miss.	104	...
Mississippi River Fuel	Selma, Mo.	...	72
National Distillers (U. S. I.)	Tuscola, Ill.	35	25
Northern Chemical Industries	Searsport, Me.	...	45
Olin Mathieson	Lake Charles, La.	95	...
	Morgantown, W. Va.	240	...
	Niagara Falls, N. Y.	7	...
Pennsylvania Salt Mfg.	Portland, Oregon	...	15
	Wyandotte, Mich.	34	...
Phillips Chemical	Etter, Tex.	180	...
	Port Adams, Tex.	162	...
Smith-Douglass	San Jacinto, Tex.	40	...
Shell Chemical	Shell Point, Calif.	110	...
	Ventura, Calif.	55	...
Simpson Coal & Chemical	Natchez, Miss.	...	60
Sinclair Refining Co. and Standard Oil (Ind.)	Hammond, Ind.	...	108
Spencer Chemical	Pittsburg, Kan.	180	...
	West Henderson, Ky.	78	...
	Vicksburg, Miss.	72	...
Standard Oil (Ohio)	Lima, O.	...	108
Sun Oil	Marcus Hook, Pa.	...	108
Tennessee Valley	Wilson Dam, Ala.	92	...
U. S. Steel	Geneva, Utah	...	72

monia production will seek and sign up outside aid in transport and retailing of ammonia. That's to even up the tussle with makers who are already established.

Other firms, cognizant of mounting ammonia inventories, are planning a kind of vertical diversification. They will turn out more solid and liquid derivatives of ammonia.

For both ammonia and its derivatives the long-term prospects in prices appear to follow the path of other petrochemicals – greater production leading to lower prices, scantier profits per ton.

The marketers of ammonia products will watch relative costs of raw materials, too, in the keener competition on the horizon. When it became more economic to obtain hydrogen from natural gas, ammonia synthesis swung away from coke. Makers may lean toward more use of catalytic reformer hydrogen and even that derived from partial oxidation of heavy residual fuel oil. First to try the latter source will be Northern Chemical Industries at Searsport, Me.

With manifold sources at hand, led by petroleum, ammonia sellers are certain to be soon saddled with surpluses—if planned anhydrous units spew forth rated capacities.

Carry-overs Down

How tough a year for pesticides was '54? One indicator, carry-over stocks in the hands of manufacturers, apparently shows that although business wasn't galloping, it may have been better than the previous season.

A U.S. Dept. of Agriculture survey of industry, undertaken in cooperation with the National Agricultural Chemicals Assn., comes up with this salient conclusion: carry-over stocks of 26 major pesticidal chemicals in the hands of producers at the end of last year's growing season (Sept. 30) totaled 134 million lbs.—a drop of 10% under the inventory held on the same date a year earlier. The figure then: 149.5 million lbs.

The report, though based on preliminary results, is believed to represent 90-95% of actual inventories in the U.S. A total of 141 manufacturers, including most of the major producers, provided information for the survey.

Of the reported 1954 stocks, slightly more than 50 million lbs., or 37%, was in the form of pesticidal dilutions or formulations, mostly ready-to-use. In 1953, 47.6 million lbs. (32%) of the Sept. 30 carry-over represented formulations.

Comparative figures are not available, but USDA officials say that '52 probably was the high point for such carry-overs in recent years. Reason: pesticide makers stepped up production sharply following the outbreak of the Korean War.

Some of the increase reflected the need to keep pace with expanded ag-

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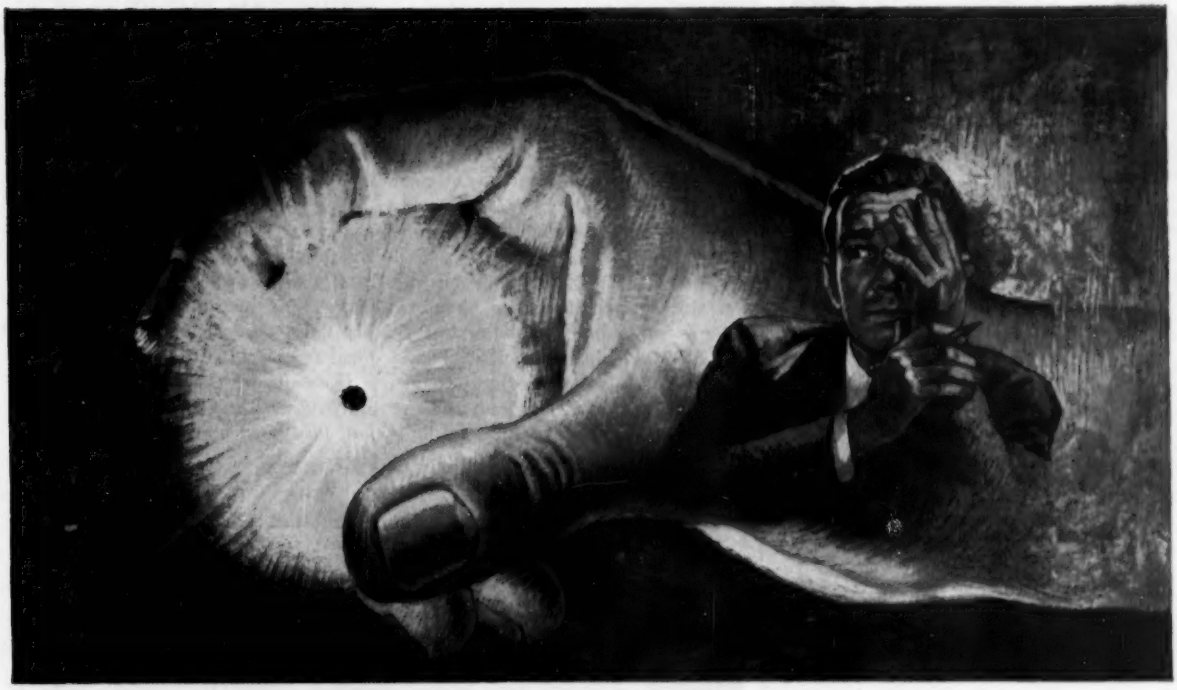

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ricultural output, but a good part of it was aimed at an enlarged export market that didn't quite materialize. Exchange problems, dollar shortages among importing countries, and some expansion in foreign manufacturing facilities all combined to hold exports to modest levels.

The drop in last year's inventories, say the fact-finders, is considered a healthy adjustment from the surplus situation of two years earlier. Fact is '54's over-all stocks of materials are termed "normal" in the USDA report, but the data indicate that inventories of some individual chemicals varied somewhat—both up and down—from normal.

A quick 1953-54 comparison of total stocks (technical plus mixtures, in terms of technical) of the top 7 (of the 26 principal pesticidal chemicals covered in the survey) points up the annual variations: ground sulfur, 22.9 million in '54 vs 26.9 million lbs. in '53; DDT, 24.9 million as against the previous year's 20.5 million.

Copper sulfate inventories dropped some 4.5 million lbs.—15.9 in '53, 11.4 million in '54; toxaphene, too, skidded from 14.9 million lbs. to a '54 level of 9.4 million, as did 2,4-D (acid equivalent) from 9.96 million to 8.6. Lead arsenate stocks were less in '54 by about 2.9 million lbs. (9.2 vs 6.3), but benzene hexachloride (BHC, gamma except lindane), followed a reverse trend, wound up last year's reporting period some 1.5 million lbs. greater than at the end of '53's growing season—the '54 total: 6.7 million lbs.

The pattern, of course, has changed somewhat since last fall, but there's still a mixed feeling in the field. While a number of producers report a brisk pickup—in preparation for spring plantings—others haven't as yet noticed any brightening.

Government purchases for export to friendly nations *(CW Market Letter, Jan. 29)*, however, have of late been a shot in the arm to a slowing market.

TCP Goes Regular

TRICRESYL PHOSPHATE sellers may well have been on the sidelines cheering Shell's decision to add TCP to its house brand (regular) gasoline. Though bulk of the tricresyl phosphate produced in the U.S. still filters into plasticizer use, gasoline additives last year consumed some 2 million lbs., or approximately 10% of the total.

The expanding market, into regular fuel, may well shoot consumption of TCP into the 4½-5 million lbs./year range this year.

Methylene Chloride
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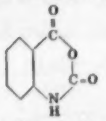
Extramural apathy . . .

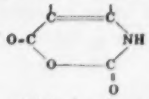
There was an inquiry from a customer as to whether we could supply isatoic anhydride:



Too frequently, perhaps, such an inquiry piques our curiosity enough to try out an idea or two. First thing we know, there is the compound, purified and in a bottle on the shelf. So we write back and tell the inquirer that we have it now, then find he doesn't really want it—just wondering if we could supply it, which is his privilege. That is how *Isatoic Anhydride* came into our list as Eastman 6975.

There, presently, one of our own chemists from another part of the enterprise noticed it and put in a requisition for a few grams. Shortly afterwards another of our laboratories wanted some. Then another internal requisition, and another. Apathetic though the rest of the world might be about *Isatoic Anhydride*, it was apparently doing us good inside.

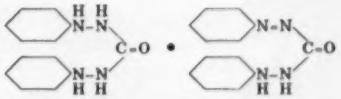
Surely we are not alone in our interest in this echo of Baeyer's work of eighty years ago on indigo chemistry. *Isatoic Anhydride*, a creamy powder melting at 240 C with decomposition. The name, easily misread, is from *isatis*, Greek for woad. A little birdie called *Org. Reac.* has told us that the



grouping, which is characteristic of isatoic anhydrides as a class, reacts with hydrazine to make an excellent source of hydrazides of certain amino acids. Of course, what we are discussing here is only the parent member of the isatoic anhydride series and that doesn't make a particularly interesting amino acid hydrazide.

Behind the quotes . . .

"s-Diphenylcarbazone" (Eastman 4459) appears in our catalog with a cynical pair of quotation marks around it. The punctuation betokens our essential honesty, indicating we know that Eastman 4459 is not really s-diphenylcarbazone. It is a double compound of s-diphenylcarbazone



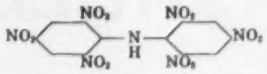
and s-diphenylcarbazide.

Sure, we can separate them, but that would greatly bump up the price of the reagent. Outmoded though the philosophy may be, we still feel that the cost of a reagent is of some practical importance. Besides, we're not so sure that separation of the components of this reagent would be a good idea.

After all, analysts have been buying it from us for years for argentometric titration of cyanides and mercurimetric titration of chlorides in biological fluids. To confuse the name of this tried and true reagent just because some academically minded organic chemists happen to know that in half the molecules the nitrogen bond has been reduced—that strikes us as a dirty trick.

Nothing (short of selling you 10 grams of "*s-Diphenylcarbazone*" for $3) would make us happier than sending you abstracts of the procedures for free.

Potassium trap . . .



The ominously nitro-begirt aspect of this molecule should not be allowed to divert attention from its useful and unusual ability to precipitate potassium selectively from solution. Its "trivial" name of dipicrylamine suggests a sensitive nature like that of picric acid and the even more sensitive ammonium salt of that acid. Dipicrylamine may not be quite so ready to yield up its potential energy with violent rapidity. All the same, our man who prepares it by further nitrating dinitrodiphenylamine (and anyone who uses it) is well advised to keep his mind on his work. When he has finished purifying it to analytical grade, he labels it *2,2',4,4',6,6'-Hexanitrodiphenylamine* and numbers it Eastman 4402. There is an abstract we give away on gravimetric, acidimetric, and colorimetric procedures with this reagent in the determination of potassium.

All this is brought to mind by a recent editorial in a British industrial magazine, captioned "Winning potash from the sea." It is about the use of this very compound on a large industrial scale. The calcium salt is added to sea water in an amount almost equivalent to the potassium content of the water. Potassium dipicrylaminate is thereby precipitated and then treated with acid to liberate the dipicrylamine for reuse.

Such a process hardly needs the purity that brings the price of Eastman 4402 up to $1.75 for 10 grams, but the editorial set us to wondering whether all the biologists and physiologists interested in the potassium balance of life know it is that easy to pick out potassium ions at will.

On and on and on we could go, there being some 3500 Eastman Organic Chemicals to talk about. Diversity is our *forte*, to say nothing of trustworthiness. List No. 39 is our latest, and it will be sent without charge upon application to *Distillation Products Industries*, Eastman Organic Chemicals Department, Rochester 3, N. Y.

Prices quoted are subject to change without notice.

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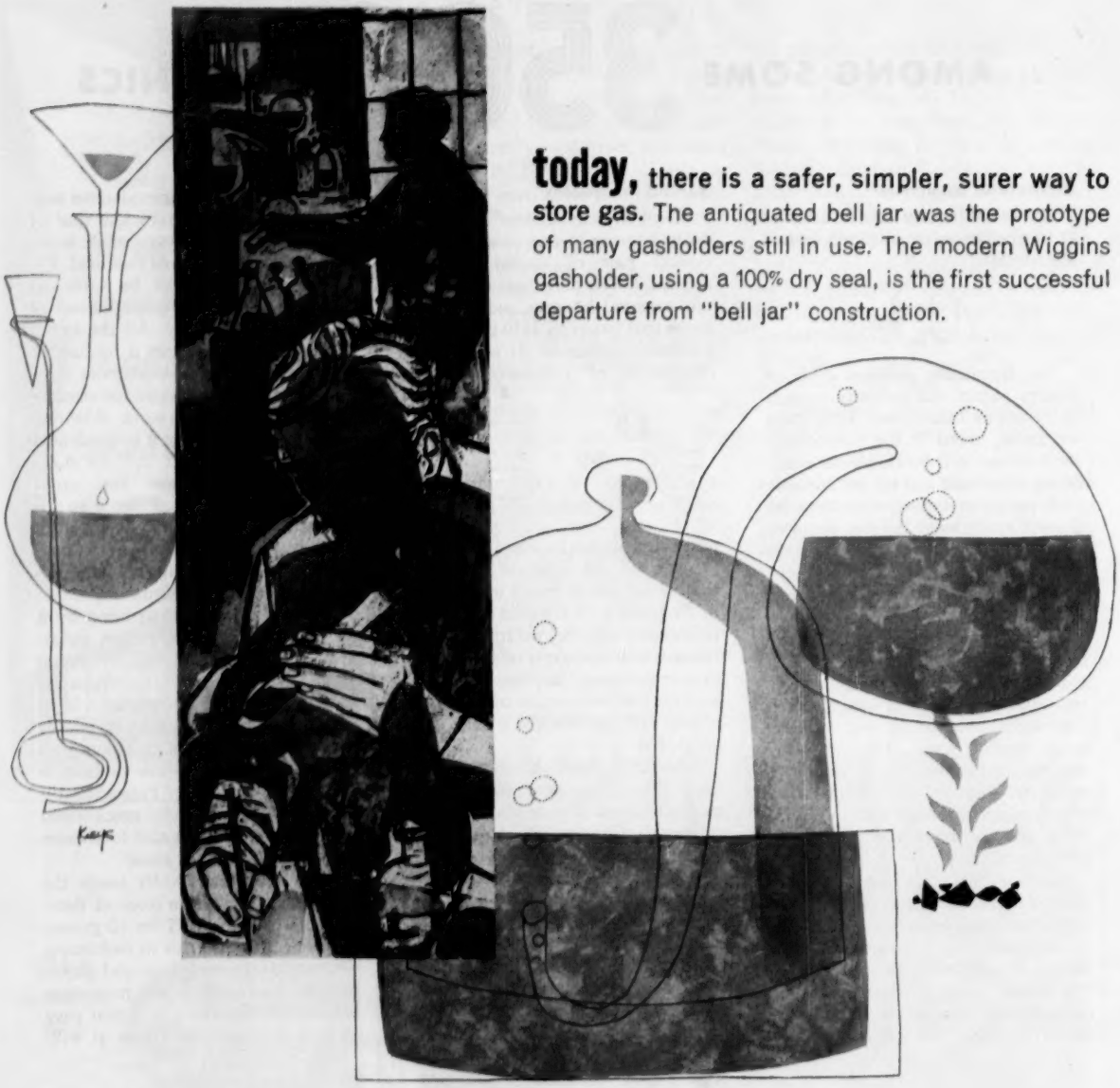

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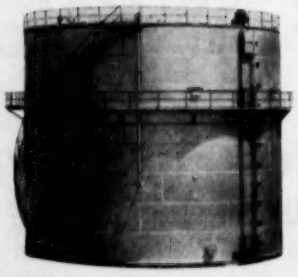

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How to Add a Buying Plus

Purchasing, like its counterpart sales, has always been regarded as being as much an art as a science. But if recent trends continue, the picture of the old-time cigar-chewing, fly-by-the-seat-of-his-pants purchasing agent may fade out permanently

The day of the artful buyer may not be over, but in the future it's likely he'll supplement his native skills with more cold analytical figures—the same kind that back up the sales campaigns of the host of vendors who call upon him. That's the nub of what chemical buyers are thinking these days, especially if they attended either session of the Chemical and Allied Products Buyers Group (in New York last week, Chicago the week before).

Like a traveling road show, the New York session, attended by nearly 200 buyers of chemicals, was a repeat performance (with some cast changes) of the Chicago bill. Both hit hard on two themes:

- That scientific-minded buyers can add to their effectiveness through the use of market research.
- That chemical purchasers, by accepting the increasing number of business decisions thrust upon them, were in position to rise more frequently to upper management councils than was possible in the past.

More Science: Reflecting several facets of their subject, the champions of market research urged and demonstrated that research for purchasing could pay off as it has in sales planning.

- Du Pont's J. W. "Mac" McKinney tendered numerous examples of how cost-price analysis of competitive materials can be used in purchasing. His conclusion: in the hands of a buyer faced with vendors' sales arguments, cost-price analysis could be a formidable tool.
- American Cyanamid's Borden Putnam outlined how basic market research methods could be applied to purchasing. Putnam's viewpoint: market research information is developed by the same methods, uses the same data sources whether intended for sales or purchasing application. Chief difference, Putnam pointed out, lies in how the collected data are used.

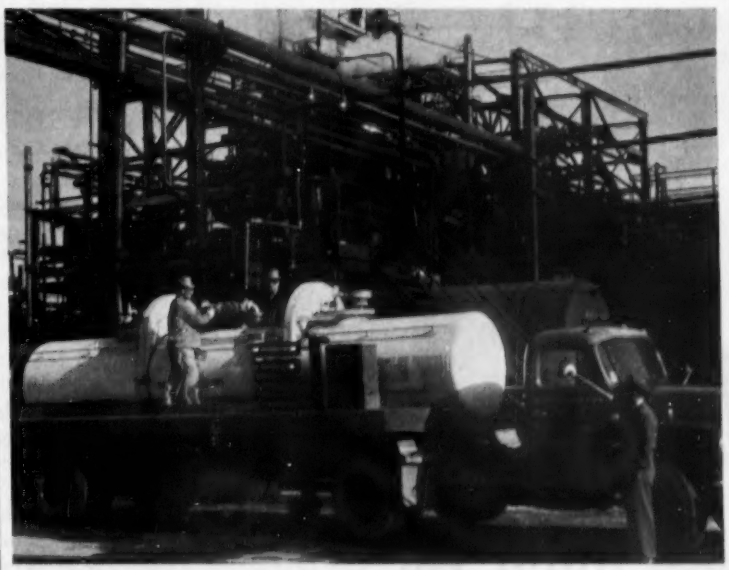
More Stature: Esso Standard Oil's Osgood Tracy, luncheon speaker before the New York meeting, indicated several routes by which any alert chemical buyer could raise himself to more important management positions. Roads to success, according to Tracy:

- Through ability to accept full responsibility for spending a substantial part of his company's income. (At Esso, for example, buyers spend $200 million annually—roughly the same amount as the total company payroll.)
- By representing his company in good customer and public relations.
- As a practical "sea lawyer in the increasingly complex field of government regulations."
- As a partner in his company's research and development program.
- As a teacher and counselor to the sales managers of the future. Esso, according to Tracy, "counts very heavily on the experience of its principal chemical buyers to indoctrinate its young salesmen."

And in his remarks of the previous week in Chicago, Armour's E. A. Moss, like Tracy, predicted that tomorrow's purchasing agent, as an aspirant to the ranks of top management, "should go pretty far." Moss's argument:

- Anyone who makes a business decision is performing a management function.
- The purchasing agent, from his "right in the middle of markets" position, can participate in numerous management decisions.

If there was one over-all conclusion that may have stuck in the minds of the chemical buyer audience, it might have been this: an alert buyer could go far up the chemical management ladder; and if he availed himself of market research tools, his progress would be so much the faster.



Nickel, Nickel, Nothing But

NICKEL-WALLED, nickel-valved and nickel-fitted, this 2185-gal. two-section tank truck is the latest example of the switch to specialized bulk transport. Designed for benzyl chloride shipment from the W. G. Krummrich plant Monsanto, Ill., of Monsanto's Organic Chemical Division, the truck supplements existent 55-gal. nickel drums, will serve the firm's Eastern district. The contents are emptied by nitrogen.

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Objective: More Overseas Sales

A heavy foreign accent pervaded the speech in a most unlikely part of the country last week. Up at Midland, Mich., two topics, related but independent, lent the foreign flavor to much of the conversation.* The two:

- Establishment of Dow's new subsidiary *(CW Newsletter, Jan. 29)* in Rotterdam, Netherlands.
- A 5-day, 28-session foreign sales conference of key Dow personnel.

Details of the Netherlands plant to date:

- To be known as Nederlandsche Dow Maatschappij N.V., the Dutch concern will be Dow's first wholly owned European subsidiary. (An English associate company, Distrene Ltd., is 45% Dow-held.)
- The subsidiary will import, manufacture and sell domestically and abroad, a variety of chemicals, plastics and magnesium metal.
- To assist industrial customers in developing finished goods, a technical service group will be attached to the company.
- Dow will use leased tankers to carry basic raw materials from the U.S. The new plant will also purchase Dutch and other European materials.
- All sales will be handled by Dow Chemical International Ltd. and Dow Inter-American Ltd. (Unofficially, *CW* understands the major portion of the Dutch output will be exported.)
- John Van Stirum, of Dow Chemical International, will manage the operation.

In addition to the Dutch move—Dow export managers, gathered for the occasion at Midland, mapped out plans for stepping up export sales for the coming year. Goal for fiscal 1955: 10% of total sales. (Currently, reported net company sales are running at an annual $444 million clip.) This marks a distinct increase over the fiscal 1954 effort, export sales for that period amounting to 6% of the total.

The Dutch operation will not, of course, play a significant part in the 1955 year; construction on the Rotterdam plant site is expected to begin about mid-1955, according to Dow President Leland Doan.

* Above, Dow and Netherlands officials study plant site. Left to right, standing, N. Th. Koomans, managing director of Port of Rotterdam; Clayton Shoemaker, president, Dow Chem. International; seated, Senator J. van Tilberg, Deputy Mayor of Rotterdam; H. L. Woltersom, Dutch banker, chairman of the new company, Joseph Bourdrez, General Manager, Netherlands Industrial Institute, New York.

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This exceptional material has a great future in the design of office equipment and furniture, automobile interiors, luggage, wall paneling and vending machines. It may give you an idea for using a Geon material to improve a product and cut maintenance costs. For technical information about Geon materials and how they can be made into products that resist abrasion, heat, cold, oil, gas and many chemicals, please write Dept. K-2, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

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AMA Spots Marketing

Holding the attention of a good many sales executives next week will be the American Management Assn.'s marketing meeting at New York's Hotel Statler, Feb. 7-9. Subjects of particular interest to chemical businessmen:

- What the new FTC pricing recommendations mean to sales management—Edward Howrey, Chairman, Federal Trade Commission.
- Merging new products lines into your sales organization—Lloyd Hatch, vice-president, research and product development, Minnesota Mining & Mfg. Co.
- Johnson & Johnson's program for building a productive sales force—H. M. Poole, Jr., vice-president, and Charles McDermott, director of sales training.
- Firm controls on sales expense—Robert Gibson, general manager, chemical division, General Electric Co.
- Developing a communications program that stimulates salesmen—George Nelson, George Nelson & Associates.
- Reviving a lagging sales curve—Donald Williams, director of sales, Dow Chemical Co.
- Are you getting full use of your advertising agency?—Marion Harper, Jr., McCann-Erickson, Inc.

•

Sales Shifts:

- Distillation Products Industries, division of Eastman Kodak Co., has opened a sales office in Memphis, Tenn., to handle all the division's product lines, with particular emphasis on monoglycerides. Territory covered: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Oklahoma, North and South Carolina, Tennessee and Texas.
- Shell Chemical Corp. has added a district sales office at Pasco, Wash., to sell agricultural ammonia in the Northwest.
- Chorney Chemical Co., a new enterprise with head office in Montreal, will be the agent for the Vitamin Division, Nopco Chemical Co. Melvin Chorney, formerly of Dillon Chemical Co., Ltd., has organized the company to specialize in bulk chemical sales to the pharmaceutical industry.
- Dow Chemical Co.'s latest field sales office, in New Orleans, will serve the four-state area including Louisiana, the southern half of Mississippi, southwestern Alabama and northwestern Florida. It's the third (following Minneapolis and Cincinnati) field office to be set up in the past 18 months.
- Beryllium Corp. (Reading, Pa.) is now providing sales engineering services to beryllium alloy users in Texas and Louisiana through a new, Houston, Tex., office.
- Atlas Powder Co. is transferring the marketing of Hystrene fatty acids to The HumKo Co. (Memphis, Tenn.). Concurrently, George Collins, who headed Hystrene sales at Atlas, is joining Humko to head its fatty acid sales program. Atlas and HumKo will continue their close supplier-customer relations.
- Marblette Corp.'s (Long Island City) two new representatives are Acorn Adhesives (Los Angeles) and Waldor Enterprises (Montreal).
- Schenectady Resin, division of Schenectady Varnish, has created a new Southeastern sales region headquartered in Atlanta, Ga.
- Arnold, Hoffman & Co., Inc. has opened an Atlanta, Ga., office and warehouse to cover all Southern states sales (excepting Virginia, North and South Carolina, which will continue to be serviced from Charlotte, N.C.).

•

Fertilizer Film: Fertilization and irrigation come under the camera lens in the National Fertilizer Assn.'s new movie, "Weather or Not." In color and sound, the film illustrates how scientific fertilization and irrigation can pyramid farm profits in suitable areas. "Weather or Not" is offered for free loan or outright purchase by the NFA.

•

Service Lab Additions: Monsanto Chemical Co.'s Organic Division has placed a new paper chemical lab into operation at St. Louis. Chief function: customer service and application investigations for fortified rosin sizes. Screening and preliminary evaluations of potential paper chemicals will also be performed.

- Metasap Chemical Co. (Nopco Chemical Co. subsidiary) has cut the tape on its just-finished sales service and research lab in Harrison, N.J. Screening, testing, service and research on metallic soaps will be the major activities of the lab.
- Du Pont has broken ground for a $2.8-million sales-service lab ex-

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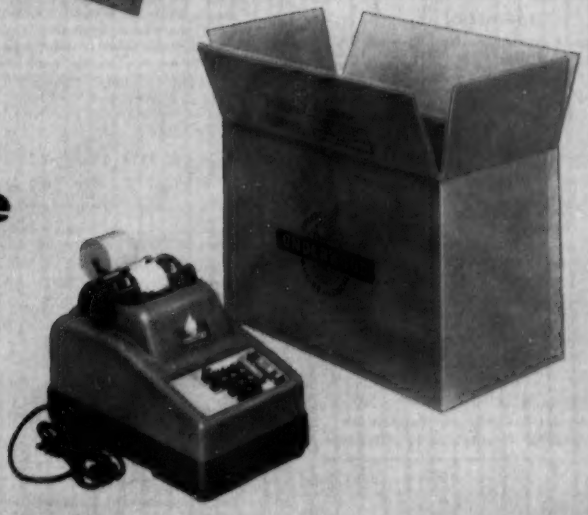
at point-of-sale

economize
on shipping costs

advertise
in transit



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clusively for the firm's Rubber Chemical Divsion. Scheduled for completion in 1956, the one-story building will have some 62,000 sq. ft. of floor space for about 200 laboratory personnel. Separate areas will be allotted to isocyanates, paper, cement, latex, dry polymer processing, physical testing and consumer product evaluation.

•

For Your Reference: Carbide and Carbon Chemicals Co. (New York) has issued three new technical bulletins: Cellosolve and Carbitol Solvents; ethyl acetate; and acetone. Specifications, physical and chemical properties, and physiological characteristics are among the data given.

• Monsanto Chemical Co. (St. Louis) offers two new booklets: "Sodium Phosphates" presents over 50 starting-point formulations and general properties of the salts in detergents, water softening, peptization, buffers and chelation; "Pydraul F-9" describes a fire-resistant hydraulic fluid, supplies data on properties and past performances. Both booklets contain physical constants, specifications and potential uses.

• Vermiculite – revised edition (1955) of technical brochure supplies information on physical and chemical properties, tabulates over 40 applications, and delineates the uses in terms of the mineral's characteristics. Zonolite Co., Chicago.

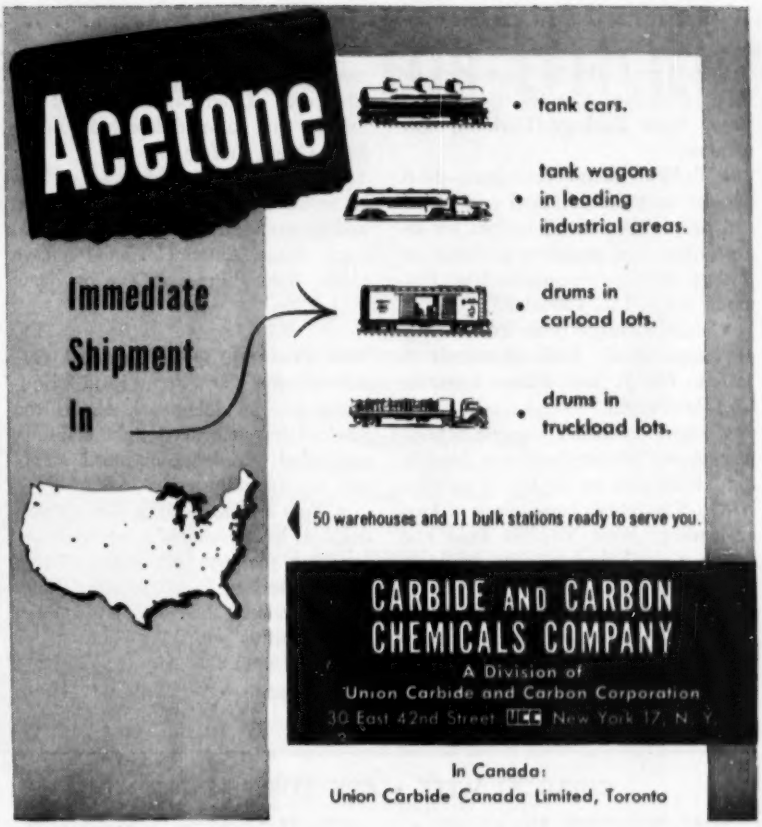
• Fatty alcohol sulfates – booklet outlines physical and chemical properties and suggested uses of long-chain alcohol sulfates. American Alcolac Corp., Baltimore.

• Essential oil and price catalog–revised edition (1955) listing essential oils, aromatic chemicals, and certified colors and their prices. Dodge & Olcott, New York.

• Box car unloaders–folder describes car unloader for free-flowing materials in situations intermediate to hand-controlled power shovels and rotary dump installations. Stephens-Adamson Mfg. Co., Aurora, Ill.

• Color paste concentrates–leaflets containing data on color, density, packaging, opacity, and light stability of coloring materials for organic resins. Claremont Pigment Dispersion Corp., Brooklyn.

• Steel container catalog–furnishes illustrations, specifications, and descriptions of lug cover, lug cover pouring, tight-head drum, flexible spout,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baskets, and double compartment steel containers. Geuder, Paeschke & Frey, Steel Package Division, Milwaukee.

• Rubber flame retardants—16-p. booklet provides physical and chemical properties and 12 recipes for using chlorinated paraffins as flame retarders in rubber compounding. Diamond Alkali Co., Cleveland.

• Bulk chemical price list—listings of reagent-grade bulk chemicals in 100- to 600-lb. lots. Fisher Scientific Co., Pittsburgh.

• Lignin-butadiene-styrene copolymer coprecipitates—brochure furnishing information on the use of indulin-70-GR-S in rubber compounds of lower loading. West Virginia Pulp and Paper Co., Polychemicals Division, Charleston, S.C.

• Hydrogen peroxide vapor—bulletin containing vapor pressure data, boiling points and heat of vaporization of aqueous hydrogen peroxide solutions. Methods of generation and possible uses of the vapor phase of the oxidant are also delineated. Becco Sales Corp., Buffalo.

• Sodium sesquicarbonate – brochure offering information on physical and chemical properties and potential applications. Allied Chemical & Dye Corp., Solvay Process Division, New York City.

•

New Products: Dow Chemical Co., now offering a new saran resin formulation for monofilaments, claims the product has improved light stability, controlled shrinkage, reduced static, and extrudability.

• Yale & Towne Mfg. Co. (Philadelphia) has developed a special drum-handling platform permitting raising of two standard 55-gal. drums 165 in. Capacity: 1500 lbs. The platform can be used either with "Warehousers" or with fork trucks.

• Emerson & Cuming, Inc. (Canton, Mass.) is now producing a new two-part casting resin, Stycast 2340M that requires no additional catalyst.

• American Agile Corp. (Bedford, O.) is offering a line of polyethylene bottles and jars. The containers, made by the hot gas welding process, are available in ten standard sizes from 1 qt. to 5 gal.

• Industrial Safety Supply Co., Inc. (Hartford, Conn.) now has available new wood-jacket polyethylene bottle stackable carboys. According to company officials, the carboy fits ordinary acid handling equipment, has a "safety filling liquid level slot" and is ICC approved.

•

Purchasing Shuffle: American Can Co. is forming a purchasing department in its Atlantic Division. The new department, which will establish its main office in New York, will assume functions formerly handled by the general organization.

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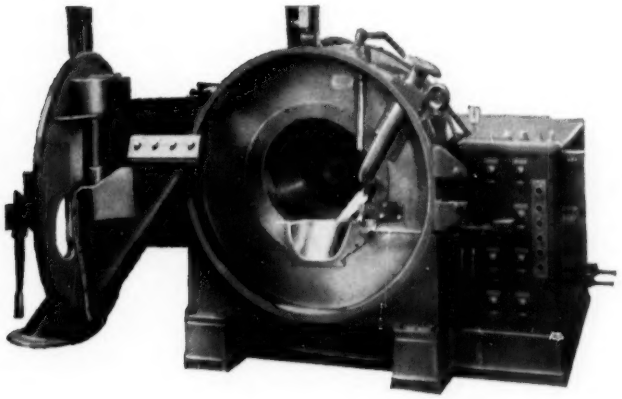

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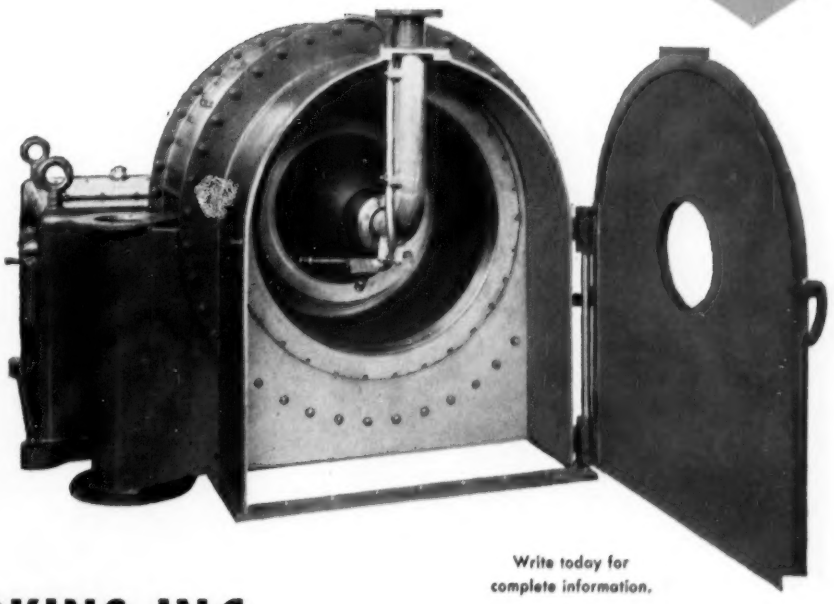

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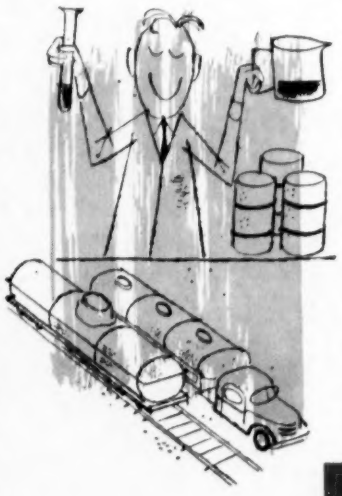
CARBIDE'S acetone is high specification material, over 99.5% pure. Its purity, uniformity, and constant supply are assured because CARBIDE'S acetone is produced synthetically. You should investigate the wide range of solvent uses for acetone. Write for the booklet, "Ketones" F-4767.

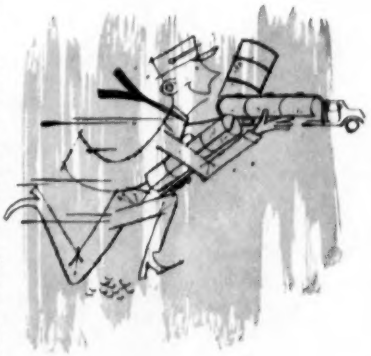
HOW YOU'LL WANT IT...

Delivery of CARBIDE'S acetone can be made to suit your particular requirements in tank cars, drum carloads, tank trucks, truck loads, or single drums.



WHEN AND WHERE YOU'LL WANT IT...

Acetone is delivered from any of CARBIDE'S forty-nine warehouses and eleven bulk stations. Their strategic locations save you time by giving you fast delivery, when and where you want it.



For Additional Information—

Just call or write any of CARBIDE'S twenty-three sales offices for the latest prices or any other data you may need. In Canada: Carbide Chemicals Sales Company, Division of Union Carbide Canada Limited, Toronto.

CARBIDE AND CARBON CHEMICALS

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.